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WASHINGTON, D.C. 20268-0001

Periodic Reporting)
(UPS Proposals One, Two and Three))

Docket No. RM2016-2

PUBLIC REPRESENTATIVE COMMENTS

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I. INTRODUCTION

A. Summary of Public Representative's Comments

United Parcel Service (UPS) filed a petition in this docket pursuant to 39 CFR § 3050.11, 39 U.S.C. § 3652(a) and 39 U.S.C. § 3633(a) proposing that the Commission initiate proceedings to order the Postal Service to accept three significant changes in its cost methodology.¹ Proposal One would attribute inframarginal costs to competitive products.² Proposal Two would attribute certain fixed costs to products on the Postal Service's competitive product list.³ Proposal Three would increase the "appropriate share" pursuant to 39 U.S.C. 3633(a)(3), from 5.5 percent.⁴ UPS's Proposals are supported by a Report prepared by Dr. Neels⁵ filed with the Petition. Neither method of attribution proposed by UPS has been previously accepted nor considered in depth by this Commission.

Proposal One and Proposal Two each relate to the issue of the proper attribution of all variable costs to the Postal Service's products. Because of the potentially significant impact that Proposals One and Two could have on the size of the Postal Service's unattributed costs, and given that Proposal Three relates to the portion of these costs that should be covered by competitive products, the Commission has postponed the consideration of Proposal Three until the impact of Proposals One and Two are determined.

Currently, under Commission approved methodology, only marginal costs and some product specific costs are attributed to Postal Service products." Costs

¹ Petition of United Parcel Service, Inc. for the Initiation of Proceedings to Make Changes to Postal Service Costing Methodologies, October 8, 2015 (Petition).

² Proposal One—A Proposal to Attribute all Variable Costs Caused by Competitive Products to Competitive Products Using Existing Distribution Methods, October 8, 2015 (Proposal One).

³ Proposal Two—A Proposal to Correct the Misclassification of Fixed Costs (Proposal Two).

⁴ Proposal Three—A Proposal to Adjusts the "Appropriate Share" of Institutional Costs that Must be Covered by Competitive Product Revenue, October 8, 2015 (Proposal Three).

⁵ Report of Dr. Kevin Neels Concerning UPS Proposals One, Two, and Three, October 8, 2015 (Neels Report).

attributable” with respect to a competitive product means “the direct and indirect postal costs attributable to such product through reliably identified causal relationships.” 39 U.S.C. § 3631(b). In 1983, the Supreme Court ruled in *National Association of Greeting Card Publishers v. U. S. Postal Service*⁶ on the meaning of the statutory language—“reliably identified causal relationships”—as applied to costs and classes of mail and service. The Court expressed the view that if a causal relationship between costs and a class of mail or service is determined, it must be adopted. Nevertheless, the Court recognized that a determination of attribution may be forestalled or delayed pending the gathering of additional data to ensure the causal relationship exists.

However, after the Supreme Court spoke in the *NAGCP* case, the Postal Accountability and Enhancement Act (PAEA) was passed that altered the statutory framework underlying the Supreme Court’s suggestion that costs must be attributed where a causal relationship is shown to exist. Uncodified Section 703 of the PAEA provides that when the Commission is revising regulations under section 3633 (as UPS requests and the Commission is considering here), it *shall* take into account events that affect the continuing validity of the Federal Trade Commission’s (FTC’s) estimate of net economic effect of federal laws with respect to the competitive category of mail.⁷ That is, in this proceeding concerning potential revision of regulations under section 3633, section 703 of the PAEA requires the Commission to consider the current state of the competitive market resulting from modifications of federal law since the FTC Report. The Commission should also consider the state of the current competitive marketplace and whether adopting UPS’s proposals is necessary to improve the competitive marketplace or, on the other hand, whether the restrictions placed on the Postal Service by the PAEA would potentially lessen the Postal Service’s ability to compete freely in the competitive market.

⁶ *National Association of Greeting Card Publishers v. U. S. Postal Service*, 462 U.S. 810 (1983)(hereinafter *NAGCP*).

⁷ Postal Accountability and Enhancement Act (PAEA), Pub. L. No. 109-435, § 703 (2006).

Since the FTC Report, several Postal Service categories of parcels have been transferred to the competitive product list. Those transfers deregulating several parcel products may have changed the net economic effect of the federal laws effective at the time of the FTC Report. Before revising regulations under section 3633, the possible effect on the competitive tilt must be considered by the Commission in the process of determining the methodology for attribution of costs under section 3633. In other words, an apparent reliably identifiable causal relationship does not necessarily end the Commission's inquiry. In addition, the Commission must also consider the section 703 requisites.

The Public Representative has reviewed UPS's technical presentations in support of Proposals One and Two. The Public Representative concludes that a reliably identified causal relationship between inframarginal costs and competitive products has been demonstrated by Proposal One. In addition, a reliably identified causal relationship exists between inframarginal costs and market-dominant products. However, before making a determination whether or not it is now appropriate to attribute inframarginal costs to Postal Service competitive products, the Commission must consider the current state of the competitive market resulting from modifications of federal law since the FTC Report as directed by Section 703 of the PAEA.

The Public Representative believes the technical presentation in Proposal Two is unpersuasive. No reliably identified causal relationship has been demonstrated between the proposed variable fixed costs and the competitive products. The Public Representative recommends rejection of Proposal Two. However, while the Public Representative recommends rejecting Proposal Two, the Public Representative also recommends a review of the assumptions the Postal Service relies on to distinguish between fixed and variable cost for each component.

B. Statutory Purpose of These Proceedings

The Commission established this proceeding in response to UPS's Petition filed pursuant to 39 C.F.R. § 3050.11 to improve the *quality, accuracy, or completeness of data or analysis of data* in the Postal Service's annual periodic reports to the Commission.⁸ Section 3652 of title 39 from the Postal Accountability and Enhancement Act (PAEA) requires the Postal Service to file a report at the conclusion of each fiscal year analyzing its finances and operation for compliance with the requirements of the PAEA. The Commission has responsibility under § 3652(a)(1) to prescribe the methods used to produce the information on which the annual report is based.

Particularly relevant to this proceeding is 39 U.S.C. § 3633, whereby Commission regulations (as revised from time to time) must, among other things, "prohibit the subsidization of competitive products by market dominant products" 39 U.S.C. § 3633(a)(1), and "ensure that each competitive product covers its costs attributable." 39 U.S.C. § 3633(a)(2).⁹ UPS seeks an order in this proceeding requiring the Postal Service to change its methodology for determining its attributable costs for purposes of compliance with the PAEA. Maintenance of compliance with section 3633 is important. The extent that the Commission's regulations are achieving the objectives under section 3633 is to be submitted in the Commission's annual report to the President and the Congress concerning the operations of the Commission under title 39. 39 U.S.C. § 3651(a).

The Commission's rules provide that it shall evaluate the proposals as a request to initiate an informal rulemaking under procedures consistent with 5 U.S.C. § 553. 39

⁸ Notice of Proposed Rulemaking on United Parcel Service, Inc.'s Proposed Changes to Postal Service Costing Methodologies (UPS Proposals One, Two, and Three), October 29, 2015 (Notice). Comments were initially due January 25, 2016, but weather-related closure of the federal government for two days on January 25 and 26, 2016 required filing on January 27, 2016.

⁹ Consideration of the third provision of § 3633(a), subsection (a)(3) to "ensure that all competitive products collectively cover ... an appropriate share of the institutional costs of the Postal Service," has been delayed until the outcome of UPS's Proposals One and Two are known. Notice and Order at 6.

C.F.R. § 3050.11(d)(1). That is, the Commission interprets the definition of a “rule” in the Administrative Procedure Act (APA) to include analytical methods that affect the way costs or revenues are accounted for in a rate setting regulatory regime. See 5 U.S.C. §§ 551(4) and 553.¹⁰

If one or both of the UPS Proposals are approved, the Commission would normally simply order the Postal Service to change its analytical principals. Because analytical principles approved by the Commission are contained in its various orders, no specific change in the language within the Commission’s regulations in 39 C.F.R. is necessarily contemplated by the Proposals although this proceeding is essentially a rulemaking to revise regulations under § 3633.

C. Underlying Issues

UPS proposes two significant changes in cost attribution of competitive products representing a major change in the oversight of Postal Service prices for competitive products. Currently attributable costs are based upon marginal costs. UPS argues that the current method is flawed because it “largely ignores other costs that vary with product volume...that are incurred in producing all the units of output up to, but not including, the current (or ‘marginal’) level of production. These additional variable costs have been termed ‘*inframarginal*’ costs.” Petition at 5-7. UPS also seeks attribution of “variable” fixed costs. Acceptance of one or both proposals would lead to large increases of attributable costs for competitive and probably market dominant products and consequently reduce cost coverages for those products.

The Commission’s role is to comply with statutory requirements and, in the case of competitive products, to insure among other things that the cost of each competitive

¹⁰ Docket No. RM2008-2, Notice Of Proposed Rulemaking on Costing Methods Used in Periodic Reporting, August 18, 2008 (Order No. 99) at 3.

product covers its costs attributable. 39 U.S.C. § 3633(a)(3). This mandate serves the twin purposes of insuring market dominant customers do not pay higher prices than needed to subsidize competitive products and to insure a level playing field for the competitive markets where competitive products are not subsidized by market dominant products.

UPS's concern is somewhat narrower. UPS operates in the Postal Service's competitive market and seeks to insure the Postal Service does not go beyond its "regulatory mandate" in competing against private companies in unregulated markets. Petition at 2. It argues that if competitive ventures of the Postal Service are subsidized, it can cause significant harm to "participants in the competitive market, who will see the efficient operation of their market disrupted." *Id.*

Attributable Costs. Substantively, this is a case involving technical arguments among economists about whether component level inframarginal or "variable" fixed costs can be considered "costs attributable," and distributed to individual products using the same distribution keys used to distribute volume variable and product specific costs, which the Commission currently considers to comprise attributable costs. The Postal Service has confirmed that, since the PAEA, it has neither calculated nor produced incremental costs for individual competitive products. Postal Service Response to CHIR No. 6, question 1. The effect of attributing these additional costs to competitive products would be to raise the price floor on those products. According to UPS, adding inframarginal costs to the attributable costs under current methodology would increase competitive attributable costs by 25 percent and increase market dominant attributable costs by 38 percent. Proposal One at 26.

Market Dominant Product Cost Coverage Impact. A factor for Commission consideration is that acceptance of the proposed attribution methodology to competitive products is the likelihood that, for consistency, the methodology should at some time also be applied to market dominant products, either in this rulemaking or in another docket. Attributing additional costs to market dominant products would significantly

increase the coverage shortfall for those products not currently covering costs. See Table 1, *supra* at 32. Under current law, the price cap on market dominant products would prevent the Postal Service from adjusting its rates to recover cost coverage shortfalls. However, a large majority of products would continue to earn revenues above their attributable costs and the main effect would fall on products already “below water.”

Level Competitive Playing Field. Perhaps more significantly, in terms of regulatory economics and market regulation, this case is also about the continuing need, if any, to further the clear Congressional intent behind the PAEA to enhance, create and maintain a level playing field among competitors in the marketplace for competitive products of the Postal Service, UPS and FedEx or others providing similar products and services.

UPS points to one Congressional goal of the PAEA: to level the playing field to ensure fair competition and to prevent cross-subsidization as justification for adding more attributable costs for the Postal Service’s competitive products. Petition at 13-17. Underlying that argument is the implicit suggestion that currently an uneven playing field prevents UPS (and others) from competing effectively with the Postal Service’s products. There can be no doubt that the playing field was intended to be tilted toward a more level playing field for Postal Service competitors by passage of the provisions in the PAEA. However, the field subsequently has been further leveled as prices for the Postal Service competitive parcel products, overall, have risen substantially in recent years, in part by the transfer of several market dominant categories of parcels to the competitive product list. The Commission should consider the state of competition in the competitive parcel market and whether attribution of inframarginal costs at this time is necessary to relieve market distortion claimed by UPS.

II. LAW OF ATTRIBUTION

A. Statutory Provisions and Commission Regulations

The primary question in reviewing UPS's proposals is whether these inframarginal costs and so called variable fixed costs are, in fact, attributable. The analysis required to make these determinations requires the Commission to consider legal analysis of the meaning of "postal costs attributable," economic theory, economic results, and the obligations linked to § 703 of the PAEA, namely consideration of the current state of the competitive market resulting from modifications of federal law since the FTC Report, and specifically, the advisability of UPS's proposals given the current state of the competitive product market.

The PAEA requires that the Commission's regulations, as they may from time to time be revised, must "ensure that each competitive product covers its costs attributable". 39 U.S.C. § 3633(a)(2). Attributable costs are specifically defined as "the direct and indirect postal costs attributable to such product through reliably identified causal relationships." 39 U.S.C. § 3631(b).¹¹ The Commission's regulations carry out that mandate. They provide that, in addition to two other statutory requirements, "For purposes of determining competitive products' compliance with 39 U.S.C § 3633...Each competitive product must recover its attributable costs as defined in 39 U.S.C. § 3631(b)." 39 C.F.R. § 3015.7.¹²

The Commission's review of UPS's proposals or implementation of its own views on attributable costs turns in large part upon the application of tests enunciated by the

¹¹ This section succeeded § 3622 from the Postal Reorganization Act which pertained to classes of mail and services rather than products. Nevertheless, the definition of attribution did not change with the PAEA although, as more fully explained below, the application of attributable costs within the provisions of the PAEA affects the Commission's analysis of UPS's proposals.

¹² In conformity with § 3633, the regulations also prohibit subsidization by market dominant products of competitive products and that competitive products collectively cover an appropriate share of institutional costs. On this latter point, the regulations provide that the appropriate share is at a minimum an annual 5.5 percent of the Postal Service's total institutional costs. 39 C.F.R. § 3015.7 (a), (c).

Supreme Court. The Supreme Court decision in *NAGCP* considered the standard to be applied by the Commission for attributable costs under 39 U.S.C. § 3622 pursuant to the Postal Reorganization Act of 1970, Pub. L. 91-375 (1970). That decision remains controlling on the determination of attributable costs because the PAEA carried forward that part relevant here of the attributable costs language from the previous legislation, *i.e.* reliably identified causal relationships.” 39 U.S.C. § 3631(b).

Attributable costs for competitive products in § 3631(b) of title 39 of the code are defined in the same way that attributable costs are defined for market dominant product mail, *i.e.* “reliably identified causal relationships,” except that attributable costs for market dominant mail apply to “each class of mail or type of mail service” 39 U.S.C. § 3622(c)(2).¹³ Thus, for competitive services, attributable costs are determined for each product rather than for a class or type of service as with market dominant services.

The requirement to determine competitive attributable costs for each product impacts the desirability of UPS’s proposals. UPS must demonstrate that its inframarginal costs represent “direct and indirect postal costs attributable to each product through reliably identified causal relationships,” a more refined attribution than assignment to mail classes or types of mail service. Nevertheless, with this difference noted, the similarity of the attributable cost definitions for competitive and market dominant mail enables reference and reliance in this proceeding upon the history of policies and practices that determine attribution for market dominant mail.

An initial question is whether the methodology proposed by UPS would be, if approved, a reasonable construction of the Act. That is, would it be reasonable to

¹³ “[T]he requirement that each class of mail or type of mail service bear the direct and indirect postal costs attributable to each class or type of mail service through reliably identified causal relationships plus that portion of all other costs of the Postal Service reasonably assignable to such class or type.” 39 U.S.C. § 3622(c)(2).

The phrase, “plus that portion of all other costs of the Postal Service reasonably assignable to such class or type” is omitted from § 3633 because that phrase involves the assignment of institutional costs which are not used to weigh whether a competitive product covers its own costs.

attribute infra-marginal costs and “variable” fixed costs to products. The Supreme Court made clear, when speaking of attribution, all appropriate costing approaches may be considered to identify causal relationships between costs and classes. *NAGCP* at 825. The Court specifically rejected the rate floor established by attributable costs as relating to only costs that vary over the short term in response to changes in volume. *Id.* at 832-833. The critical issue is whether the relationship has a sufficient causal nexus, *i.e.*, is the cost the result of providing a particular product?

B. Determination of Attributable Costs

1. Supreme Court Holding in *NAGCP v. USPS*

Cost causation has been viewed for many years, at least as far back of the Commission’s August 28, 1975 Opinion in Docket No. R74-1, by the Commission and later acknowledged by the U.S. Supreme Court in *NAGCP* as the statutory and logical basis for cost attribution.¹⁴ The Supreme Court specifically recognized that while the Postal Service is responsible for conforming total revenues with total costs, the Commission “determines the proportion of the revenue that should be raised by each class [product in this case] of mail.” *NAGCP* at 821.¹⁵

The Supreme Court spoke favorably of the Commission’s adopted theory of costing but recognized the Commission is not bound by any one theory of attributable costs.¹⁶ The Supreme Court made clear, as new data or methods become available to the Commission, costs that are reliably identified with a causal relationship to products

¹⁴ In addition, the Rate Commission takes the view that “causation is both the statutory and the logical basis for attribution.” PRC Op. R74-1 at 110. The parties do not dispute these premises, and we see no reason to question them.” See *NAGCP* at 820.

¹⁵ There, the Court noted that while the long-run variable cost approach was contemplated by the Act, other methods of causation could be used. *Id.* at 830.

¹⁶ “On its face, there is no reason to suppose that § 3622(b)(3) [predecessor to § 3631(b)] denies to the expert rate-setting agency, exercising its reasonable judgment, the authority to decide which methods sufficiently identify the required causal connection between particular services and particular costs.” *Id.* at 826.

can be added to attributable cost. On the other hand, if costs are not reliably identifiable, they should not be attributed. The Commission has rejected proposed methodologies in the past. See *Id.* at 826.

Fundamentally, the Supreme Court said, “Congress did not dictate a specific method for identifying causal relationships between costs and classes of mail, but the Act “envision[s] consideration of all appropriate costing approaches.” *Id.*, quoting PRC opinions. Section 3622(b)(3) under the Postal Reorganization Act (PRA) required the Commission to look to all costs, both direct and indirect. Direct costs had been elements of costs which can be unequivocally related to a particular product or output and indirect costs are elements of costs which cannot unequivocally be associated with a particular output or product. *Id.* at 826, n. 21. But the agency in the exercise of reasonable judgment has “the authority to decide which methods sufficiently identify the requisite causal connection between particular services and particular costs.” *Id.* at 827.¹⁷ Subsequently, the Commission agreed when it stated, “Since *NAGCP*, it can no longer be argued that the Act recognizes only volume variable and specific fixed costs as potentially exhibiting causal relationships with classes of mail...It seems clear that the prerequisite for attributability is that the proposed causal relationship be reliable - - not that it be of the kind recognized in a particular formulation of economic theory.” PRC Op. R87-1 at 124-125. The task for the Commission is to decide whether the new costs UPS would attribute to competitive products are reliably identifiable as causing costs for particular products.

¹⁷ See *also*, “The statute...leaves to the Commissioners, in the first instance, to decide which methods provide reasonable assurance that costs are the result of providing one class of service.” *Id.* at 833.

2. Cost accounting principles are insufficient basis for attributable costs

Since the Supreme Court ruled in *NAGCP*, it has been clear that the application of cost accounting principles is insufficient as a basis to attribute costs.¹⁸ The Commission had refused to use general accounting principles based on distribution keys without an established causal basis.¹⁹ The attribution must be based on causation. *Id.* at 823. The Court said Congress has not dictated a special method of identifying causal relationships, but envisions consideration of all appropriate costs approaches.²⁰

3. History of attributable costs

Some years prior to the Supreme Court's ruling, the Kappel Commission Report recommended that each mail service recover all costs "demonstrably related" to avoid the inequity of users of one class subsidizing user of another class.²¹ The House bill adopted a rate floor consisting of "demonstrably related" costs described in the House Report of the bill as "identifiable costs." *Id.* The Senate plainly rejected binding rate setters to "accounting principles" stating that "no particular cost accounting system is recommended." *Id.* The conference bill replaced the phrase "demonstrably related" costs with "attributable" costs. *Id.*

Marginal or incremental costs are not the only costs that may be demonstrably related to costs. "Demonstrably related costs" was a term employed in fashioning the House bill to avoid confusion with marginal or incremental costs and "incremental costs." *Id.* at 830. Demonstrably related costs are costs that can be traced directly to the class of service or, for purposes of section 3633, a product, without any particular

¹⁸ *Id.* at 821-2.

¹⁹ *Id.* at 826. Short-run variable costs were used until long-run costing became feasible.

²⁰ *Id.* citing PRC Opinions R71-1, pp 94, R74-1, pp 92, 127, and R80-1 pp 129-133.

²¹ *Id.* at 828.

economic theory.²² Thus, the Commission is not foreclosed from attributing other costs including the inframarginal costs or “variable” fixed costs, if the Commission reasonably concludes these additional costs are causally related to a particular product. The Supreme Court noted the change from demonstrably related costs to attributable costs denoted a phrase that “connotes the use of judgment that has *no* technical meaning or significant antecedent legislative history.” (Emphasis added.) *Id.* at 832. The Court recognized the Commission has leeway to use its judgment to determine on a reasoned basis direct or indirect postal costs rather than rely on solely technical analysis to determine attributable costs. The Supreme Court concluded the Commission acted consistently with its attributable cost mandate “in refusing to use distribution keys or other accounting principles lacking an established causal basis.” *Id.* at 829.

Costs other than marginal or specific fixed costs have been attributed. The Commission attributed single subclass access costs as part of city carrier costing upon demonstration that “the subclass responsible for those access costs could be “identified directly from the City Carrier Cost System (CCCS) data. The Commission concluded, “Given this clear and direct showing of causality, the Act requires that single subclass access cost be attributed.”²³ The Postal Service had argued the prior volume variability analysis of access costs have been found sufficiently reliable to satisfy § 3622(b)(3) and that abandoning the prior method in favor of the newer method was because of the resultant higher attribution. *Id.* at 14. The Commission rejected the Postal Service’s argument. This demonstrates that despite previously approved and implemented methodologies, new evidence of additional costs of causation has been accepted by the Commission. *Id.* Moreover, the Commission noted that if single subclass stop costs are subclass incremental costs, they do not necessarily represent the costs of removing all subclass pieces from the system. The purpose of single subclass stops costs is to

²² *Id.* at 831, citing a Post Office submittal before the House Committee on Post Office and Civil Service.

²³ PRC Opinion and Further Recommended Decision, Docket No. R94-1, June 7, 1995 at 13.

recognize the exclusive responsibility for certain costs, rather than estimating incremental costs for purposes of testing for cross-subsidy pursuant to section 3633(a)(2).²⁴

In the first rate case after *NAGCP*, the Commission recognized the responsibility of balancing two mandatory statutory responsibilities. PRC Op. R-84, para. 3025 at 131. Apart from correctly attributing costs, a secondary theme of the Supreme Court's Opinion in *NAGCP* was noted by the Commission as one to, "Prevent cross-subsidization of one class by another." The Commission cautioned that while it "is not required, or indeed allowed, to base inferences of causation on speculation or aprioristic accounting definitions' that "would contravene the Supreme Court's insistence on *reliable* causal relationships," the Commission was equally concerned that "excessive caution in this respect may result in treating particular cost functions, in fact causally associated with certain classes of mail, as institutional, and so distributing them among all the classes. This would result in cross-subsidization." *Id.* at para. 3024-3025. It noted that while cross-subsidy is not always an unmitigated evil, it has been condemned by the statute the Commission is required to carry out. *Id.* at para. 3025 at n.10.

On the other hand, legislative history and Commission precedent support the view that when causal analysis is limited by insufficient data, the statute envisions the Commission will press for better data rather than construct attribution relying on "unsupported inferences of causation." *NAGCP* at 827 citing PRC Op. R74-1, pp. 110-111." Where data is lacking during a period of transition, better data will be sought rather than construct attribution on a basis not contemplated by the law. *Id.*

²⁴ PRC Opinion and Recommended Decision, Docket No. R94-1, November 30, 1994 at III-46 n. 44.

C. Factors in Addition to Causal Relationship Must Be Considered When Attributing Costs

1. Supreme Court opinion in *NAGCP v. USPS*

The *NAGCP* Court appears to have believed, as stated in discussion unrelated to the Court's holding, that the Commission might not have a choice but to attribute costs shown to have a causal relationship. The Court stated, "We agree that, because the Rate Commission has decided that these methods reliably indicate causal connection between classes of mail and postal rates, the Act requires that they be employed." *NAGCP* at 830. Later, in the same opinion, the court again stated, "The statute requires attribution of any cost for which the source can be identified but leaves it to the Commissioners, in the first instance, to decide which methods provide reasonable assurance that costs are the result of providing one class of service." *Id.* at 833.

The Court's discussion was later recognized by the Commission, "While we have wide discretion to select methods of identifying such relationships [of causality], we may not decline to calculate attributable costs on the basis of those we do identify. PRC Op.R87-1 at 119, citing *NAGCP* at 826-7, 829 fn. 24; 833.

These statements by the Court and the Commission appear to decide the question of whether, if the Commission finds cost causation related to competitive products, it must attribute those costs without considering the consequences of that attribution. On the other hand, there is the question of whether the Commission may consider other factors such as the impact of additional attribution on Postal Service revenues, rates, and profits, and the effect on competition in the marketplace for the Postal Service's products and on prices to be paid by the consuming public.

2. Section 703 of the PAEA

While the Supreme Court's comments in *NAGCP* discussed the Postal Reorganization Act's requirement to attribute costs found causally related, they have

been effectively superseded by a specific legislative directive in uncodified section 703 of the PAEA.²⁵

Section 703(d) of the PAEA provides the Commission an explicit and continuing statutory responsibility when considering revising its regulations under section 3633 that it “shall take into account...subsequent events [after the Federal Trade Commission Report]²⁶ that affect the continuing validity of the estimate of the net economic effect” of federal laws that apply differently to the Postal Service and to private companies providing similar products.

UPS is seeking a modification of the Commission’s regulations regarding 3633(a)(2) to modify the Commission’s longstanding policy for attributing costs under section 3633(a)(2). This is a rulemaking proceeding in which UPS is proposing the Commission establish a requirement of future effect that the Postal Service include inframarginal and certain “variable” fixed costs in any calculation of attributable costs in the future. Thus, this proceeding is subject to the requirements of section 703.²⁷

Transfers of various mail services to the competitive product list following passage of the PAEA and the FTC report represent changes in federal law that have

²⁵ Section 703 is reproduced in the notes with 39 U.S.C.A. § 3633. Section 703(d) Competitive Product Regulation provides: “Competitive product regulation.--The Postal Regulatory Commission shall take into account the recommendations of the Federal Trade Commission, and subsequent events that affect the continuing validity of the estimate of the net economic effect, in promulgating or revising the regulations required under section 3633 of title 39, United States Code.” Pub. L. 109-435, Title VII, § 703(d), December 20, 2006, 120 Stat. 3244.

²⁶ Accounting for Laws that Apply Differently to the United States Postal Service and its Private Competitors, A Report by the Federal Trade Commission, December 2007 (FTC Report).

²⁷ The focus of consideration under § 703 by the FTC was on laws that advantaged the Postal Service although it also considered laws of disadvantage to the Postal Service: “At the same time, because the USPS is a federal government entity, it must comply with a host of federal requirements that do not apply to private firms, such as restriction on its ability to manage its labor costs and to configure its network.” *Id.* at 6. The PAEA placed many parcel products in the market dominant list subject to the price cap. An objective reading of § 703 permits consideration of the changes in law since the PAEA that transferred some market dominant mail to the competitive product list. While freeing prices from the cap, the transfers also placed a price floor of attributable costs under competitive products that could disadvantage the Postal Service with reduced pricing flexibility if attributable costs are prematurely forced upward.

impacted the net economic effect of the laws that serve to treat the Postal Service differently than at the time of the FTC Report.^{28 29} Since the FTC Report in 2007, the following competitive parcel products or their predecessors have transferred from the market dominant to the competitive product list. First-Class Package Service, Parcel Select, Standard Post (now Retail Ground), and Parcel Return Service. First-Class Package Services represent the largest revenue in this group followed by Parcel Select and Standard Post. By deregulating the prices of market dominant parcels, the impact of the price cap on that mail has been eliminated, thus to some degree changing the net effect of federal law treating the Postal Service differently than other companies and thereby further changing the playing field for competitive products whereby the Postal Service can and does compete more directly with its competitors.

The FTC Report tended to focus on implicit subsidies that provide the Postal Service an economic advantage for its products, particularly competitive products, but the FTC also suggested Congress may wish to consider acting to reduce the constraints on the Postal Service's competitive operations. FTC Report at 9. The FTC did not discuss the potential advantages of adjusting federal law at the Commission (agency)

²⁸ Accounting for Laws that Apply Differently to the United States Postal Service and its Private Competitors, A Report by the Federal Trade Commission, December 2007.

²⁹ To support its case, UPS references the Federal Trade Commission's report on the laws at the time of passage of the PAEA and recognized the continuing obligation of the Commission to consider the state of the competitive market pursuant to § 3633 (Congress tasked the FTC to identify legal and other "disparities under 39 U.S.C. § 3633. PAEA, Pub. L. No. 109-435, § 703 (2006); *see also* H.R. Rep. No. 109-66 at 30.") Petition at 16. In the interim, prior to those recommendations, the FTC was to account under § 3633 for the net economic effects provided by those Federal and State laws that applied differently to the Postal Service. PAEA, Pub. L. 108-4435, § 703.

The Senate Report stated: The Committee recognizes that the Postal Service may enjoy other advantages in the competitive product market that are not addressed in this legislation. For this reason, we require in section 703 that the Federal Trade Commission submit a report to the President, Congress and the Postal Regulatory Commission within one year of the enactment of this Act identifying any federal and state laws that apply differently to the Postal Service than they do to the Postal Service's private sector competitors. If any discriminatory laws are identified, the Trade Commission's report will include recommendations for either ending the discrimination or accounting for them in some way through the rates the Postal Service charges for its competitive products. The Regulatory Commission will take the Trade Commission's recommendations into account when revising the regulations on rates for competitive products required under section 3633 of title 39." S. Rep. No. 108-318, at 29.

level by transferring market dominant products to the competitive product list. However, because of the recent transfers, price constraints have been lifted and the Postal Service has been able to raise substantially its prices for those particular new competitive products on the competitive product list, thereby significantly altering the competitive landscape. It is clear from the language of section 703 that Congress intended revisions of regulations pursuant to section 3633 were not to be undertaken in a vacuum without reviewing the impact of ongoing changes in the net economic effect of federal law over time that might influence the decision to change the regulation. Revising cost attributions pursuant to section 3633 requires consideration of changes in federal law since the FTC Report.

Thus, even if the Commission finds a direct causal relationship between some inframarginal costs and certain competitive products, the fact that additional products are now designated competitive, and the fact that there have been large price increases in the Postal Service's rates for competitive products since passage of the PAEA, the Commission shall consider under section 703 the net economic effects of those rate changes when revising its regulations regarding attribution methodology for purposes of compliance with 3633(a)(2).³⁰ It follows that upon such consideration, certain costs with a causal relationship to products may be omitted from classification as attributable costs if, otherwise, the purpose of the PAEA to foster a level playing field would be, or might be, diminished.

Another basis for considering other factors, even if a reliably identifiable causal connection is suspected, is the judicially approved option to defer attributing costs if there is a need to acquire additional data to support a future decision. The data does not necessarily need to be data demonstrating attribution. It may be data necessary to make a finding with regard to section 703.

³⁰ The Commission in this docket is considering the UPS proposals for a change in the rules defining attributable costs by requiring the Postal Service to use a different methodology for calculating attributable costs in the future.

D. UPS's Burden of Persuasion

UPS recognizes that its proposals represent a departure from established methods of attributing costs. The Commission evaluates costing changes using the informal rulemaking approach outlined in the FY 2007 Annual Compliance Determination (ACD).³¹ Those who propose changes in analytical methods bear the burden of persuasion. In the ACD FY 2007, the Commission set forth its view for the process:

[I]n the Commission's view, those who would advocate introducing changes in analytical methods in the Postal Service's first annual compliance report bear the burden of persuasion. In this docket, the Commission follows a general policy that only changes that are reasonably balanced updates of input data, straightforward, straightforward reflections of data, or simple, no controversial changes to analytical methods will be approved. The Commission will approve a change that does not meet this description only if it has been shown that making an asymmetrical update of input data, or changing an analytical method from that which prevailed in the most recent fully-litigated rate case (Docket No. R2006-1) is necessary to avoid a much greater distortion that would result from rejecting the update or change. ACD FY 2007 at 9-10.

The Commission must be able to make an informed evaluation of the impact on rates and cost coverages of the proposed departures from current cost attribution methods.³²

³¹ Docket No. RM2008-2, Order Accepting Certain Analytical Principles for Use in the Postal Service's Periodic Reports, October 10, 2008 (Order No. 115) at 1.

³² Where the Postal Service had filed an across-the-board rate increase but refused to provide a rough approximation of the attributable cost floor using the Commission's methods for attributing certain costs, the Commissions stated, "The Commission considers quantification of the impact of proposed departures in cost attribution methods and in rate design principles from those established in the previous omnibus rate proceeding to be basic to the ability of interveners, the Commission, and the public to make an informed evaluation of a Postal Service request for a change in rates.. For that reason, the Commission considers it the Postal Service's duty to include such information with future omnibus rate filings. Docket No. R94-1, Opinion and Recommended Decision, November 30, 1994 at I-20-21, para. 1065-66, 1074. Here, the proponent of the attribution changes is UPS. Absent independent Commission confirmation, UPS must provide that information or risk rejection of its proposals for a lack of justification.

UPS has two burdens of persuasion in this case. First, UPS must convince, or the Commission may determine on its own, that inframarginal costs and the “variable” fixed costs it proposes fit within the definition of direct or indirect costs through reliably identified causal relationships.” That is, are causal relationships reliably identified between those costs as UPS defines them and each of the competitive products to which it would assign those costs?

A second burden of persuasion for UPS in this proceeding is that the impact of the proposals is not harmful to the Postal Service or the marketplace. The relevant impacts are those that immediately impact cost coverages for competitive products and market dominant products, and in the longer term may affect the decision as to the appropriate percentage share of institutional costs to be borne by competitive products. In addition, UPS assumes the competitive playing field has not been leveled sufficiently since the PAEA and the FTC Report. UPS must persuade the Commission that, on balance, its methodology is desirable to remove competitive market distortions rather than potentially disrupting the functioning of the current competitive product market to the disadvantage of the Postal Service or its customers.

III. UPS PROPOSAL ONE

UPS’s argument relies upon the well-established understanding that variable costs are equal to what most postal economists would refer to as the sum of volume variable costs and inframarginal costs. Stated differently, variable costs are larger than volume variable costs.³³ UPS argues that since financial viability depends upon the ability of products to earn revenues greater than their variable costs, it is most

³³ See, Docket No. R2000-1, USPS-T-22, *Testimony of Michael Bradley* (Bradley) at 22, 2nd term in equation 19, 26; *The Role of Costs for Postal Regulation*, by John Panzar (Panzar), submitted to the Commission on January 14, 2015, at 11, and *The Calculation of Postal Inframarginal Costs* by Charles McBride (McBride), submitted to the Commission on January 14, 2015, at 5. See also, McBride at 1–3.

appropriate to define cost coverage (the ratio of revenues to costs) as the ratio of a product's revenue to variable cost.³⁴

A. Need to Revisit Cost Attribution

The accepted methodology of cost attribution was developed under the PRA. The PRA tasked the Postal Rate Commission with setting prices for the Postal Service's products and services. At the time, regulatory economists, spearheaded by Alfred Kahn, who introduced airline deregulation to the Civil Aeronautics Board, believed that rate of return regulation overstated costs, and that regulation should strive to be a substitute for competition. They believed that the goal of utility regulation should be to compel a regulated utility to charge rates which approximated those which it would charge if it were subject to the forces of competition, even if the utility had a monopoly. Rather than set rates to recover all fixed cost, variable cost, working capital (a fund for future construction) plus a regulatory-determined rate of return, they maintained that the goal of the regulator should be to set prices based on marginal cost, since doing so would provide incentives for the regulated firm to be efficient.³⁵

Many regulatory economists recognized that prices should not be set equal to marginal cost when a regulated firm which had economies of scale and/or scope. In this case, making prices equal to marginal cost would not allow the utility to recover its variable costs, plus enough of its fixed costs in order to replenish its capital stock. Nonetheless, they believed marginal cost was the right starting point for setting prices.

The currently accepted methodology of attributing costs to products uses the Postal Service's accounting costs to develop product costs that are close to their

³⁴ The Commission currently distributes volume variable costs plus product specific costs (all of which it terms "attributable costs") to all products, both market dominant and competitive. It does not estimate or distribute inframarginal costs.

³⁵ See, e.g., Alfred Kahn, *The Economics of Regulation: Principles and Institutions*, particularly pages 23, 63-65.

marginal cost of production. To achieve this goal, the Postal Service takes accounting costs and assigns them to components or activities. These costs are referred to as component-level accrued costs. In order to develop marginal costs from component costs, several assumptions are required. First, it is necessary to treat each component as if it were a cost function, and assume that the elasticity of the cost function of each component is constant, namely that elasticity did not change as volume changed. Moreover, just as each component-level elasticity is assumed to be constant at all levels of production, each component's marginal cost is also assumed to be constant at all levels of production. These assumptions allow the total marginal cost of a component to be determined by multiplying the elasticity of that component by the accrued cost of each component.

Another key assumption underlying the currently accepted attribution method is that the share of a product's volume, or some other cost driver, may be used to allocate marginal costs to products such that the economies of scale and scope contained within a component are equitably shared among products.³⁶ This assumption allows one to sum the marginal component costs allocated to each product, across components which yields the marginal cost of an individual product.³⁷

³⁶ The Commission refers to marginal cost as volume variable cost (VVC), and the share of each product of the cost driver as the distribution key for that product. One might think that using a distribution key distributes, rather than allocates, total marginal costs. Economists generally agree that it is sub-optimal to allocate costs to products when their production contains economies of scale or scope. This is why the distribution key assumption is so important. It assumes that, in spite of the presence of economies of scale and scope at the component level, each product's part of the distribution key accurately captures its share of the economies of scale and scope present in each component. Using distribution keys is a cost allocation method, because it allocates joint and common component-level costs caused by the production of many products, to individual products. Even though the Commission has not generally supported the allocation of joint and common costs, it has accepted using distribution keys because, even though one cannot determine the share of common, component-level costs caused by individual products using distribution keys, using distribution keys assumes the proper allocation of joint and common component-level costs is achieved.

³⁷ To summarize: the currently accepted method of attributing costs assumes x things: 1) the component-level cost function is a constant elasticity cost function; 2) marginal component-level costs are determined at the last unit of current production, by multiplying the constant elasticity value by component-level costs (for each component); and 3) using the share of each product's costs drivers

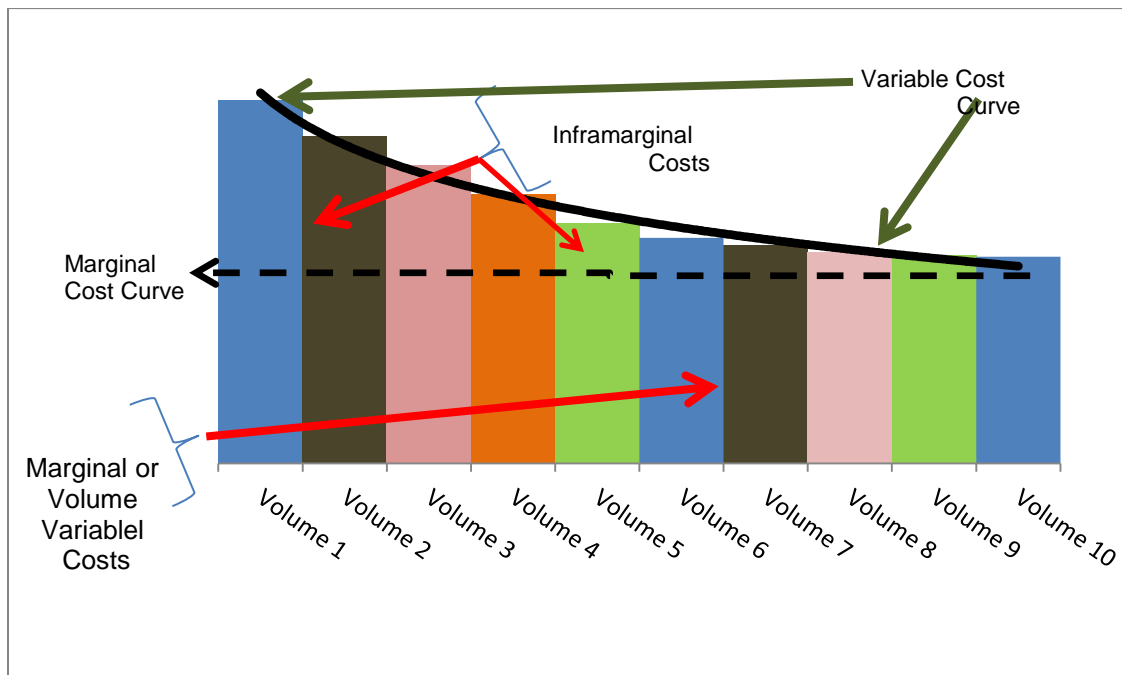
Because the current methodology applies component-level elasticity to the entire postal volume, it establishes a constant marginal cost for each component. The volume variable, or marginal cost of a product, is then achieved by allocating component-level marginal costs to individual products, and then summing across components for each product. This is so product-level *variable* costs will decline so long as the component is experiencing economies of scale or scope. When the volume-related decline ends, variable costs will equal marginal costs, but at all prior volumes, product-level variable costs will be greater than volume variable or marginal costs.³⁸ Consequently, a new cost category is needed to account for the variable costs of a component of postal activity. “Infra-marginal” costs are defined as the difference between a product’s variable cost and its marginal cost.

Thus, if one were to graph the variable cost of a product from one unit of volume to the current level of volume, shown as “Volume 10” in Figure 1, marginal costs would be the area under the marginal cost line (referred to under the current method as volume variable costs, and the area between the marginal cost line and the variable cost curve would be referred to as the product’s inframarginal costs. Remaining costs be would fixed costs. It is important to note that the concept of inframarginal cost only occurs because the current method assumes that elasticity is constant, marginal component costs are constant, and cost drivers equitably allocate component-level economies of scale and scope. As the graph shows, variable costs of a product are incurred at every level of product volume.

within each component, assumes the contribution of each product to the savings from joint and common costs, and equal to each product’s share of the distribution key. Using shares of cost drivers to reflect product costs, which include the proper share of common costs, is also required to build up an estimate of marginal or volume variable costs for components for which an elasticity is not estimated. The elasticity then becomes the ratio of component-level volume variable, or marginal, costs to component-level accrued costs. See, USPS, Summary Description of USPS Development of Costs by Segments and Components, Fiscal Year 2014, Appendix H, at H3, July 1. 2015.

³⁸ Technically, if production continues beyond the point where variable costs equal marginal costs, the firm will incur diseconomies of scale. The current methodology assumes that the current level of production volume, each year, is the volume at which economies of scale end.

Figure 1
Variable, Inframarginal, and Marginal Costs



When the PAEA was enacted into law, the Commission's responsibility changed from price setting to determining the Postal Service's compliance with applicable laws. Under the PAEA, pricing is separated from cost attribution. The Commission no longer sets prices. Congress expressly gave this authority to the Postal Service. This, in turn, increased the need for the Commission to ensure products cover their costs attributable costs based on reliably identified causal relationships. With this change in responsibilities, cost coverage has increased in importance, at least as far as the Commission's ability to ensure the viability of the Postal Service.³⁹ Consequently, the

³⁹ The Commission is tasked with ensuring the Postal Service has applied the price cap properly to each market dominant class, but price cap is set by the Consumer Price Index, not the Commission. The Commission cannot alter the price cap to improve the financial viability of the Postal Service, but, its decisions with regard to costing can alter the financial viability of the Postal Service.

Commission must examine cost attribution, including the attribution assumptions made under the PRA.

The Public Representative agrees with UPS that volume variable cost is not sufficient for determining whether a product covers its cost. Limiting attribution to marginal cost is based on the faulty assumption that the cost of delivering any volume of mail is the same, regardless of the level of volume produced and delivered each year.

The Public Representative agrees with UPS that inframarginal costs can be determined, calculated and attributed to products. UPS does not discuss attributing inframarginal costs to market dominant products. However, if the Commission determines that inframarginal costs are “costs attributable,” the Public Representative believes their calculation and subsequent distribution should not be confined to competitive products, but should also be applied to market dominant products. This would be consistent with the work of McBride and Neels. Using the Commission’s accepted methodology for calculating and distributing inframarginal costs to competitive products, McBride and UPS’s consultant Neels, calculate inframarginal costs for both market dominant and competitive products.

B. If Volume Variable Costs are Causally Related to Products, Inframarginal Costs Must Be Also Causally Related to Products

Variable costs, by definition, are caused by products and services. However, even though variable costs are directly tied to the level of production, they are not currently distributed to products. Only a subset of variable cost, volume variable cost, is attributed to products under the currently accepted methodology. Moreover, although volume variable costs are distributed to each product, the volume variable cost of each product is caused, not solely caused, by that product. The current methodology is more complicated and requires the assumption that each cost driver linked to every product, within a component, causes identical costs to be incurred by the component or activity

which perfectly allocates joint and common component-level costs to products within each component.

At the component-level of analysis, variable costs are jointly caused by all the volumes of all the products that utilize that component. With the Commission's decision to accept the notion that these component level costs can be allocated to products using a distribution key, the Commission implicitly accepted that there is a causal link between a component's volume variable cost that is jointly caused by products and the products that utilize that component which can be perfectly attributed to each product according to the extent to which it contributes to component-level common costs

The accepted methodology limits the application of the distribution key to allocation of component level costs to volume variable costs. The remaining component variable cost, inframarginal cost, is treated as a component of institutional cost.⁴⁰ However, the same rationale used to justify attributing component-level volume variable costs to products can be applied to inframarginal cost. Although inframarginal component costs include joint and common costs, so do volume variable component costs. In other words, all variable component costs are jointly caused by products. The volume variable costs currently used for attribution are calculated by multiplying the accrued component cost by the elasticity of the component. There is nothing in this formulation to suggest that joint and common costs have been removed from volume variable costs. The evidence for causality of inframarginal costs is identical to the currently accepted evidence that volume variable costs are causally related to products.

The United States Postal Service Office of Inspector General (USPS OIG) also endorses the attribution of inframarginal costs to products for the purpose of determining whether a product is covering its cost.⁴¹ It stated:

⁴⁰ The other component is fixed cost.

⁴¹ U.S. Postal Service Office of Inspector General Risk Analysis Research Center Report Number: RARC-WP-12-008A, *Primer on Postal Costing Issues*, March 20, 2012.

[T]he post has to earn enough revenue to cover not only the cost calculated at the margin (the volume variable cost), but the entire cost of the delivery of all the letters, including the “infra-marginal” cost of those letters. Recall that volume variable cost assumes that each letter can be delivered as cheaply as the last one and does not include the total variable cost of letter delivery. To see if a product is truly covering its cost, the product’s total cost, including infra-marginal, must be considered. USPS OIG at 22.

C. Development of Volume Variable, Inframarginal, and Variable Costs

Much of the previous discussion of cost development has been presented mathematically, and may provide some reader a more exact presentation of cost development. The following notations describe the development of volume variable, inframarginal, and variable costs from accrued costs at the component-level of costs.

Accrued Component Costs. Accrued Costs are assigned to dozens of different cost components or activities (j) from the Postal Service Books of Account AC_j .⁴² Stated differently, accounting activity, accrued costs, are split into several cost components.⁴³ Total Accrued Costs may be expressed as:

$$\sum_{i=1}^j AC_j, \quad (1)$$

Where there are “j” number of components. Thus, total accrued costs is equal to the sum of the cost assigned to each cost component. We now can express component-accrued costs, AC_j , as a constant elasticity function specific to the cost driver for that component D_j .⁴⁴ So,

$$AC_j = \alpha_j D_j^{\varepsilon_j} \quad (2)$$

⁴² This discussion is a restatement of Bradley at 27-28 and McBride at 2.

⁴³ For example delivery costs from the books of account are split into street and office costs using a cost-based sampling system, the In-Office Cost System (IOCS).

⁴⁴ A constant elasticity function reflects and/or assumes economies of scope. McBride at 2.

Volume Variable Component Costs. Volume variable costs are also first determined at the component level. The volume variable costs of component “j” are equal to the elasticity of a component with respect to the cost driver of the component (usually volume) V_j multiplied by accrued component costs:

$$VVC_j = \varepsilon_j AC_j = \frac{\partial AC_j}{\partial V_j} \frac{V_j}{AC_j} AC_j \quad (3)$$

Cancelling terms shows that component volume variable costs are equal to component marginal costs multiplied by component volumes:

$$VVC_j = \frac{\partial AC_j}{\partial V_j} V_j = MC_j V_j \quad (4)$$

Inframarginal Component Costs. Component-level inframarginal cost (IMC) is the sum of the non-marginal costs of the component at each driver volume except the last or marginal unit. It may be mathematically expressed as:⁴⁵

$$IMC_j = (1 - \varepsilon_j) VVC_j = (1 - \varepsilon_j) MC_j V_j \quad (5)$$

Variable Component Costs. Component-level Variable costs (VC) vary continuously with volume and are the sum of two types of component-level costs: volume variable and inframarginal costs :

$$VC_j = \varepsilon_j \alpha_j D_j^{\varepsilon_j} + (1 - \varepsilon_j) \alpha_j D_j^{\varepsilon_j} \quad (6)$$

As the above formula indicates, the sum of volume variable and inframarginal component costs are variable costs.

D. Distribution Keys Used to Distribute Volume Variable Costs Can Be Used to Distribute All Variable Costs

As previously discussed, both volume variable cost and inframarginal cost are components of variable cost. Under the accepted methodology, a distribution key is

⁴⁵ McBride at 2.

used to distribute component level volume variable cost to products. UPS Proposal One recommends the Commission distribute both volume variable and inframarginal costs to competitive products using the distribution keys already developed for volume variable costs.

The Public Representative supports using the distribution keys developed for volume variable costs to distribute inframarginal cost to products. For this purpose, there is no reason to distinguish inframarginal cost from other variable costs, since inframarginal costs are incurred in tandem with volume variable costs.⁴⁶ The distribution keys developed to distribute component level volume variable cost to products are based on the share of driver activity of a product as a whole. The decision to attribute inframarginal cost would increase the pool of costs that need to be distributed to products, but it does not change the rationale behind the decision to use share of driver activity as a fair allocation of component level costs to products.

Panzar also supports using the distribution keys developed for volume variable costs to distribute inframarginal cost to products. He states that both volume variable and inframarginal costs include economies of scope from the component level distribution, and it is appropriate to distribute both types of variable costs within components based on each product's distribution key for each component:

However, it is important to avoid the temptation to view the volume variable costs distributed to a particular product as being caused by that product. The *variable* costs of a component are jointly caused by all the volumes of all the products that utilize that component. These costs may be distributed to individual products based on that product's share of driver activity. Panzar at 13.

He further emphasizes this point when he states that "[i]n the [current] CRA, only a component's volume variable costs are distributed to individual products ... [h]owever,

⁴⁶ That is, because inframarginal and volume variable costs are both components of variable costs at every level of volume, they can be distributed in the identical manner by which volume variable costs are distributed.

in principle, the same driver shares can be used to distribute any category of *component* costs: *e.g.*, fixed costs, variable costs and inframarginal costs. Panzar at 12 and n. 9.

E. Distribution of Component Level Costs to Products

Recall that the current method of attributing component-level volume variable costs to individual products which comprise each component requires the assumption that the volume of each product's cost driver of total component drivers allows the Commission to presume that the allocation of joint and common costs to products within a component volume is reasonably caused by the amount of each product in the component. This is both a necessary assumption and a necessary step in the development of attributing costs to products.

The following shows the distribution of component-level volume variable and inframarginal costs to each product. Component-level volume variable and inframarginal cost are distributed to products according to the share of the cost driver specific to each component for each product (*i*) (known as "distribution keys") $\frac{D_{ij}}{D_j}$, and then sum the VVC and IMC distributed to each product to obtain total VVC and IMC. Their sum is VC. Thus, the volume variable cost for product *i* in component *j* is

$$VVC_{ij} = \varepsilon_j \alpha_j D_j^{\varepsilon_j} \frac{D_{ij}}{D_j} \quad (7)$$

And a product's overall volume variable cost is

$$VVC_i = \sum_{j=1}^j \varepsilon_j \alpha_j D_j^{\varepsilon_j} \frac{D_{ij}}{D_j} \quad (8)$$

The inframarginal cost for product *i* in component *j* is

$$IMC_{ij} = (1 - \varepsilon_j) \alpha_j D_j^{\varepsilon_j} \frac{D_{ij}}{D_j} \quad (9)$$

And a product's overall inframarginal cost is

$$IMC_i = \sum_{j=1}^j (1 - \varepsilon_j) \alpha_j D_j^{\varepsilon_j} \frac{D_{ij}}{D_j} \quad (10)$$

And a product's variable cost is

$$VC_i = \left\{ \sum_{j=1}^j \varepsilon_j \alpha_j D_j^{\varepsilon_j} \frac{D_{ij}}{D_j} + \sum_{j=1}^j (1 - \varepsilon_j) \alpha_j D_j^{\varepsilon_j} \frac{D_{ij}}{D_j} \right\} \quad (11)$$

F. Impact of Proposal One on Cost Coverage and Worksharing

1. Cost Coverage

Using both components of variable costs to calculate cost coverages will help improve the postal service's financial viability by more accurately identifying products most in need of cost savings and revenue growth. Cells in Table 1 with a "red" font, show the cost coverage for market dominant products which have fallen below 100 percent cost coverage as a result of adding inframarginal costs to attributable costs. Cells with a "blue" font show products with cost coverages currently below 100 percent. The table also includes cost coverages for each market dominant class and competitive products and services as a whole. Media and Library Mail, as well as Periodicals, satisfy the ECSI condition expressed in Section 3622(c)(11).

With the exception of Package Services, Periodicals, and Special and Ancillary Services, all classes have revenues sufficiently greater than current attributable plus inframarginal costs so that the Postal Service could restructure rates to bring each product into compliance with Section 3622(c)(2) of the PAEA. In short, adding inframarginal costs to products shows the same structure of financial risks associated with various products, but more clearly shows the areas where increased rates are needed to improve financial viability of products with negative and low cost coverage.

Table 1
Impacts of UPS Proposal One

	(No Fees, \$Millions)				Coverage (%)	
	Revenue	Attributable Cost	Inframarginal Cost	Attributable + Inframarginal Cost	Current	UPS Proposal One
Classes and Products	(A)	(B)	(C)	(D)	(A/B)	(A/D)
First-Class Mail						
Single-Piece Postcards	319.0	266.0	115.0	381.0	119.9	83.7
Parcels	591.0	543.0	179.0	722.0	108.8	81.9
Total First-Class	29,408.0	13,280.0	5,250.0	18,530.0	221.4	158.7
Standard Mail						
Flats	2,037.0	2,497.0	556.0	3053.0	81.6	66.7
Parcels	68.0	103.0	23.0	125.0	66.0	54.4
Total Standard Mail	17,497.0	10,534.0	3,895.0	14,429.0	166.1	121.3
Total Periodicals	1,625.0	2,134.0	505.0	2,639.0	76.1	61.6
Package Services						
BPM Flats	202.0	134.0	38.0	172.0	150.7	117.4
BPM Parcels	272.0	251.0	86.0	337.0	108.4	80.7
Media & Library Mail	308.0	328.0	95.0	423.0	93.9	72.8
Total Package Services	836.0	743.0	219.0	961.0	112.5	87.0
Total Market Dominant Services	2,060.0	1,331.0	840.0	2,171.0	154.8	94.9
Total Market Dominant Mail and Services	51,590.0	28,205.0	10,717.0	38,922.0	182.9	132.5

Source: United Parcel Service, Inc.'s Response to Chairman's Information Request No. 1, at 22.

Attributing inframarginal costs to competitive products will reduce the likelihood that market dominant products will subsidize the Postal Service's competitive products. The PAEA requires each competitive product to recover its attributable costs.⁴⁷ The Public Representative agrees with the USPS OIG that the Postal Service products should recover both volume variable and inframarginal costs in order to ensure financial viability. Measuring cost coverage in this manner signals which products, both market dominant and competitive, are not improving the Postal Service's financial position.

⁴⁷ See 39 U.S.C. § 3633(a)(2).

2. Worksharing

Attributing inframarginal costs to products increases the Postal Service's flexibility in setting workshare discounts. When mailers perform workshare activities, the Postal Service avoids certain costs it would otherwise incur. Under the PAEA, workshare discounts may not exceed costs that the Postal Service avoids as a result of workshare activities, except under specific circumstances. The Postal Service uses cost models to develop workshare cost-avoidance estimates. It adjusts modeled costs with a CRA adjustment factor so that the sum of the category costs equals CRA cost. By attributing inframarginal cost, the CRA cost will be higher, thus requiring a larger CRA adjustment factor. As this factor is applied to all the categories, a larger CRA adjustment factor has the effect of increasing cost avoidances. Attributing inframarginal costs to products increases the Postal Service's flexibility in setting discounts.

G. Consistency with Statutory Requirements of the Postal Accountability and Enhancement Act

UPS contends their proposals are consistent with statutory requirements. Petition at 13-14. As discussed elsewhere in these Comments, as part of its determination on the proposed attributable costs, when revising its regulations under section 3633 the Commission is required to consider the current net economic effects of changes in federal law on the market for competitive products.

IV. UPS PROPOSAL TWO

A. Summary of Proposal to Reclassify Fixed Costs

UPS maintains the Postal Service's costing methods "have misclassified over \$3 billion of variable costs," contained in 37 cost components, as fixed costs. Proposal Two at 1. UPS uses a variety of methods to show that the Postal Service's fixed costs in general, and at the component-level, vary with volume, and therefore contain, what it

terms, “hidden variable costs.”⁴⁸ UPS proposes the Commission “require the Postal Service to update its classification of these 37 cost pools and attribute the variable portion thereof to products....” *Id.* UPS justifies this proposal, in part, “because it would reduce the level of institutional costs which are not attributable to products.” *Id.* at 2.

Neels examines the overall fixity of costs by regressing inflation-adjusted fixed costs between FY2007 and FY2014 against weighted volume during this time period. He concludes that truly fixed costs are approximately \$8.9 billion; substantially less than the \$12 billion in fixed costs which remain after inframarginal costs are removed from institutional costs in UPS Proposal One. More specifically, he regresses inflation-adjusted fixed costs which remain after removing inframarginal costs from institutional costs against work-content-weighted volume (“weighted-volume”) which is equal to volume variable costs for that fiscal year multiplied by a volume index with base year equal to FY2014.⁴⁹ *Id.* at 35.

The intercept of that regression is the value of fixed costs when weighted volume is zero. Neels refers to the intercept value as “truly fixed” costs, because these costs are not affected by the level of volume. *Id.* at 37. When weighted volume is zero, the intercept of \$8.9 billion is the amount of fixed costs needed to begin producing mail. *Id.* at 34. Since UPS Proposal One estimates that fixed costs are approximately \$12 billion, and the first regression in Proposal Two estimates truly fixed costs are less than

⁴⁸ Since the Postal Service does not calculate fixed costs, UPS calculates component-level fixed costs as the difference between current institutional costs and inframarginal costs for components which are currently classified as partly attributable and partly fixed. Proposal Two at 6.

⁴⁹ Neels refers to workload-adjusted attributable costs as weighted volume: “[t]he weighted volume can be thought of as the attributable costs that would have been reported if 2014 volumes were replaced with volumes for the corresponding years.” To illustrate the meaning of this measure, consider the total volume of a single product volume (1) in FY2013, $V_{(1,13)}$. Weighted volume for this product would be equal to $\frac{VVC_{(1,14)} \cdot V_{(1,13)}}{V_{(1,14)}}$. The formula for weighted volume shows that it would be more appropriately referred to as volume-weighted attributable costs, since the index of annual volumes is the weighting factor.

\$9 billion, Neels concludes there is a substantial amount of variable costs “hidden” within fixed costs at the component-level. *Id.* at 40.

This leads Neels to perform a variety of component-level regressions to “develop a more detailed insight into where these hidden variable costs are to be found.” *Id.* at 44. He uses a decision tree to identify the components where hidden variable costs are likely to be found in fixed costs. Neels applies the decision tree as follows. He first checks whether the component has positive fixed costs.⁵⁰ If so, he performs a linear, single variable regression of inflation-adjusted fixed costs against weighted volumes for each component.⁵¹ If the first regression estimates a positive, but not necessarily significant, slope parameter, and produces a positive intercept parameter, he accepts the regression results. However, if the first regression produces a negative intercept term, he runs the same regression a second time, without a constant term. He accepts the results if the slope parameter is significantly different from zero.⁵² Neels contends hidden variable costs are the product of component level weighted volumes multiplied by the slope parameter for regressions which are accepted, summed across these components. Using this method, Neels estimates approximately \$3.37 billion hidden variable costs. *Id.* at 50, Table 15.

⁵⁰ Since fixed cost is the cost remaining after inframarginal cost has been removed from institutional cost, it will be zero when the component is classified as constant elasticity. In this case, the entire amount of institutional costs is equal to inframarginal costs. Thus, total fixed costs are the sum of institutional minus inframarginal costs for components which are not classified as constant elasticity components.

⁵¹ Fixed costs are component-level costs determined in UPS Proposal One and are the difference between component-level institutional costs and inframarginal costs for components which are not classified as Constant Elasticity (CE) since there are no fixed costs for CE components. All CE institutional costs are inframarginal costs. If all institutional costs in a component are fixed, weighted, there are no attributable, component-level, costs, and the explanatory variable for these components is the sum of weighted volume across all components. Neels at 41.

⁵² Otherwise known as a regression “through the origin.”

B. Methodological Problems Plaguing Regressions Used to Determine Purely Fixed Costs and Hidden Variable Costs⁵³

1. The truly fixed cost regression is flawed

Neels regression used to estimate truly fixed costs contains numerous flaws. UPS regresses inflation-adjusted fixed costs between FY2007–FY2014 against the weighted volume for the same years. UPS treats the intercept value of this regression as being equal to truly fixed costs, which it contends, remain constant across the years in question.

Fixed, Joint, and Common Costs at the Component Level are Distributed to Products. The first problem with Neels' regression is the attempt to determine unchanging fixed costs over time by relying upon the treatment of attributable costs developed from the Postal Service's Annual Ledger of Accounts. An economist might consider many of these costs to be either short-run fixed costs, joint costs, or common costs. Various types of capital expenditures, leasehold improvements, and certain contracts for vehicle use and maintenance, building maintenance and communications services, are short-run fixed costs,⁵⁴ and many components contain labor and managerial elements which are used jointly or in common.⁵⁵

These types of costs do not vary with the level of the relevant cost driver. Yet, the Postal Service, the Commission, and in this docket UPS, consider them to be attributable costs, which may be distributed to individual products using the distribution keys for the cost component in which the expense is assigned. So long as the variability of the component is greater than zero, short-run fixed, joint, or common costs

⁵³ Neels' Attachment refers to "fixed variable costs" as "hidden variable costs."

⁵⁴ More specifically, the Public Representative is referring to contracts which appear in the annual books of account as a fixed cost but which do not vary continuously with the level of a relevant cost driver, such as time, volume, cube, or distance.

⁵⁵ Joint costs occur when a specific cost from the books of account is used to produce more than one product, but not necessarily all products. If this resource is used to produce all products, it would be considered to be a common cost.

will appear to vary with volume. The Public Representative refers to these costs as “Hidden Fixed Costs.”⁵⁶

Hidden Fixed, Joint and Common Costs Can Result in Cost Misallocation. If a cost component is not 100 percent fixed, its volume variable cost will be distributed to products using the relevant distribution key. There is an allocation problem hidden within the distribution keys in these components which contain hidden fixed, joint, or common costs. The Postal Service considers product volume, or some measure related to volume, such as handlings, weight, or cube, to be an appropriate basis of a component’s distribution key. But if, for example, capital or leasehold improvements are caused by the desire to expand the provision of competitive products, volume-based distribution keys would not be appropriate, since the majority of volume is comprised of market dominant products. In this case, market dominant products would bear the vast majority of the financial risk associated with fixed costs distributed as part of volume variable costs. This has long been recognized as a problem in telecommunications.

Each of these extensive modifications to the local (telephone) network was made to facilitate the expansion of long distance service. The average investment in central office equipment per telephone increased 43 percent between 1948 and 1959....In 1945, the FCC adopted a ‘Separations Manual,’ which allocated common costs on the basis of the relative use of interstate long distance customers made of broad categories of equipment. Although relative usage methods allocated some costs to long distance, they seriously understated that allocation because they treated local and long distance as homogeneous and failed to recognize that the higher engineering standards of long distance service were the primary generators of costs. Fenster at 7.⁵⁷

⁵⁶ At this point, the term Hidden Fixed Costs includes both joint and common costs.

⁵⁷ See Attachment A, herein, Fenster, Larry, *Issue Brief: Consumer Safeguards in the Information Age: The Need for New Cost Allocation Methods*, American Association of Retired Persons, Public Policy Institute, Number 11, 1991 (Fenster). Note, old paper, author no longer endorses allocation method which was used by TVA and ultimately termed the Alternate Excess Method. The author now believes that a forward looking Shapley value allocation method yields a consistently fair and equitable allocation and its adoption would be an improvement over the current method of determining a sharing percentage, and is the most appropriate method for determining whether revenues from market dominant products are subsidizing competitive products.

Hidden Fixed, Joint, and Common Costs Bias the Estimates of Truly Fixed Costs

Hidden Fixed, Joint, and Common Costs are not recognized by UPS when it determines the pure level of fixed costs because it defines fixed costs as the costs remaining after one has deducted inframarginal costs from institutional costs.⁵⁸ Neels estimates inframarginal and fixed costs for 243 components: 165 of which have positive attributable costs, 78 of which have zero attributable costs and are 100 percent fixed.⁵⁹ Neels, UPS-LR-NP1, McBride, Case1_with 2014.xlsx. Since 165 components have attributable costs, they may contain short-run fixed, joint, and common costs. This results in an econometric problem with the estimate of fixed costs because fixed costs are present in both the independent and dependent variables of the regression.⁶⁰

Volume-Weighted Regression Is Questionable. Neels' decision to estimate truly fixed costs by regressing inflation-adjusted fixed costs against volume-weighted attributable costs is problematic. Weighting annual costs by a volume index does control for volume changes, but does not include other factors which affect fixed costs, such as the levels of internet diffusion, degrees of competition, and relevant demographic factors which would control for variables that do not vary with mail volume. Changes in the magnitude of these variables over time could affect fixed costs even though they are not volume variable. Without these control variables, weighted volume

⁵⁸ In the case of direct components classified as constant elasticity, there will be no residual fixed costs. Non-constant elasticity components institutional costs equal fixed costs, and dependent cost components: "For dependent cost components, [institutional]...costs will usually be part inframarginal and part fixed, because dependent components are based on a sum of components, some of which have inframarginal costs while others have fixed costs." McBride at 6. UPS examines where fixed costs comprise all or part of institutional costs.

⁵⁹ Some of the 78 components with zero attributable costs may be classified as partly fixed/partly attributable by the Postal Service, but these components do not have attributable costs, and are considered 100 percent fixed by the Public Representative and Neels.

⁶⁰ The econometric consequence is measurement error associated with estimated coefficients of the intercept and the slope parameter. This probably yields biased estimates because it is probable that the regression residuals are significantly correlated with the independent variable since the independent variable is partly comprised of hidden fixed costs and the independent variable is the annual estimate fixed cost portion of institutional costs.

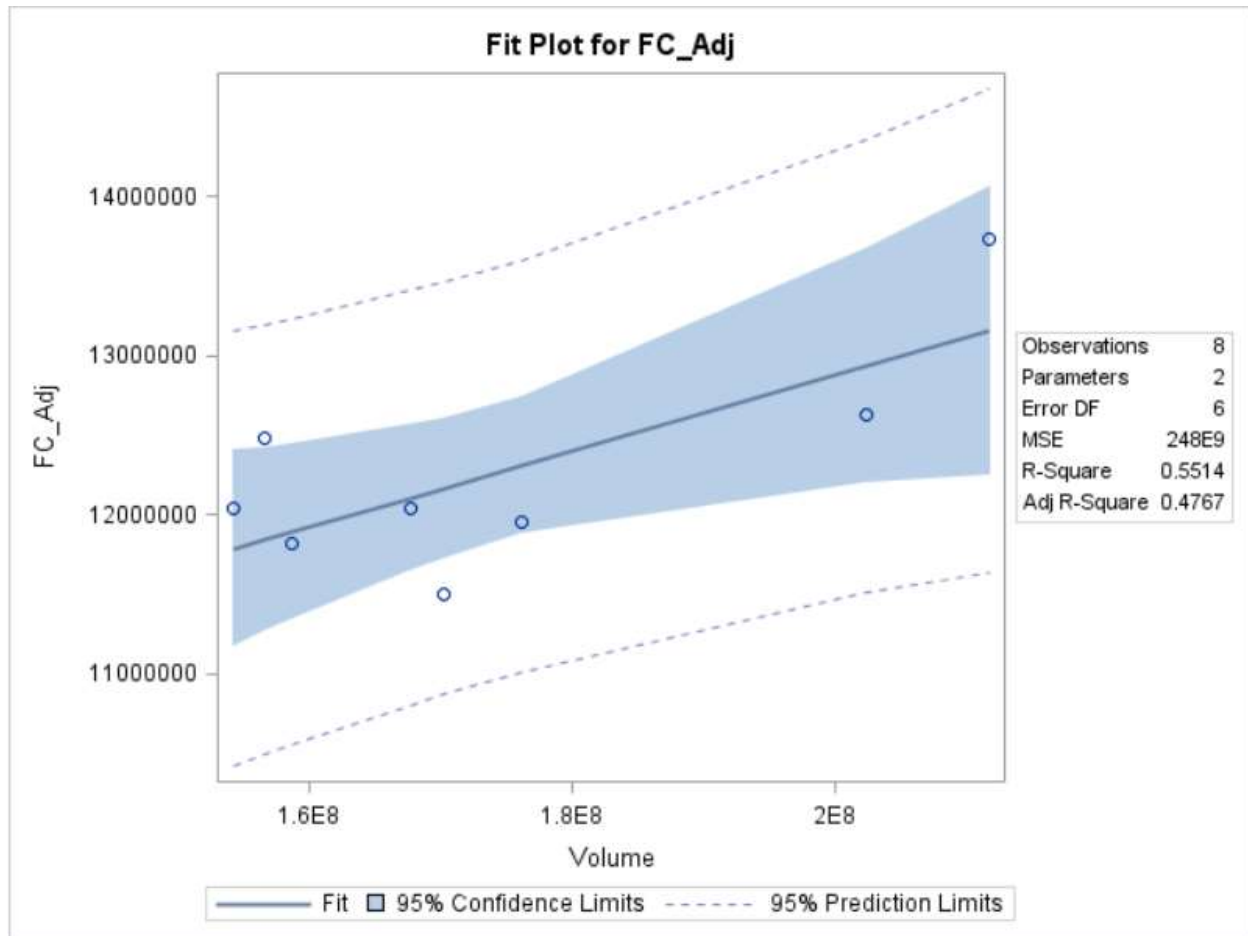
will capture changes in fixed costs not due to changes in volume which, in turn, could yield biased results.

The Public Representative tested the effect of regressing inflation-adjusted fixed costs against recorded annual volumes, rather than weighted-volumes. The Public Representative used the Fisher Inflation Index included in Neels' workpapers to deflate fixed costs. The Public Representative also obtained component level fixed costs from Neels' workpapers. Neels at 10. Following Neels, the Public Representative also excluded cost segments 18.3.4 (Workers Compensation) and 18.3.6 (Annuitant Health Benefits and Earned CSRS Pensions). Surprisingly, the results were very similar. Figure 2 reproduces Neels' Table 8, using volumes, rather than weighted volumes, as the independent variable.

Figure 2: Regression Results
Annual Fixed Costs Against Annual Volumes

	Value	Standard Error	T-statistic	P-value
Constant	\$8,105,939,000	1,545,241,000	5.25	.0019
Volume Parameter	.02387	.00879	2.72	.0348
Observations	8			
Adjusted R Square	.4767			

The regression intercept, which shows the magnitude of fixed costs, is \$8.1 billion, compared to \$8.8 billion in the volume-weighted regression used by UPS. The parameter errors are larger, and the adjusted R^2 is 48 percent, rather than 61 percent. The regression plot in Figure 3, below, shows this regression is a poor fit, which is not surprising given the lack of control variables and the dearth of observations. The Adjusted R^2 is especially low for a time series regression. The Public Representative has little confidence that truly fixed costs of the Postal Service are either \$8.1 billion as the Public Representative obtained, or \$8.8 billion as UPS obtained.

Figure 3: Plot of Fixed Costs Against Volume

2. Component level regressions are flawed

Neels obtained regression results by regressing inflation-adjusted, component level, fixed costs against weighted volume of 84 components. He maintains his results are meaningful, since 67 of these 84 regressions (80 percent) have positive slopes. If the chance of obtaining a positive slope were random, only 42 (50 percent) of slope parameters would be positive. He concludes that since it is statistically improbable so many more than one-half of slope parameters are positive, it is highly probable there are hidden variable costs in many components. Neels at 41.

Neels then focuses on 37 components for which his regressions result in positive and statistically significant coefficients on weighted volume but negative constant terms, as discussed above. He reports the following results:

- 15 components which the Postal Service classifies as fixed contain approximately \$658 million hidden variable costs. *Id.* at 46 and Table 12.
- 5 components which the Postal Service classifies as partly attributable/partly fixed, contain approximately \$2.3 billion hidden variable costs. *Id.* at 47.
- 17 additional components which have significant and positive slope coefficients contain approximately \$403 million hidden variable costs. *Id.* at 49, Table 14.

The Public Representative concludes that the component level regressions are seriously flawed and should not be accepted by the Commission. The Public Representative was first concerned that nearly one-half (44) of the original 84 regressions were estimated to have negative intercepts which were significantly different from zero.⁶¹ The Public Representative matched components with negative intercepts and their attributable costs. It found that all of them, including the 37 components presented in Neels' analysis, had no attributable costs. Neels reports that when a component did not have attributable costs, he regressed component level fixed costs against the sum of weighted volume across all components.⁶² *Id.* at 41. The result is a substantial error measuring weighted volumes, the independent variable. While the dependent variable is measured at the component-level, its fixed costs are regressed against a much larger portion of company-wide weighted volumes. It is safe to conclude that the component level regressions do not produce meaningful component-level results. Moreover, the component-level regressions suffer from the same problems as the regression used to determine truly fixed costs.

⁶¹ UPS_LR NP-1, Component Fixed Cost Regression Results.csv.

⁶² Neels' Stata program clearly shows that all component fixed costs are regressed against the sum of weighted volumes across components. His component regressions regress fixed component costs against total weighted volumes. UPS-LR-NP1\2 - Fixed Cost Regressions.do, Code Components: `gen weighted_vol_total = weighted_vol_Comp + weighted_vol_MD, and regress fixed_cost_real weighted_vol_total`. The Public Representative also examined the weighted volumes in each component regression and confirmed that weighted volumes are the same for all component regressions.

Although neither the Public Representative nor Neels have derived a reliable estimate of “variable” fixed costs, it does not mean that some costs that are now included in fixed costs are not in fact variable.

McBride also expresses reservations regarding the classification of costs:

[W]e have serious reservations about the lack of a consistent approach as well as documentation for the criteria used by the Postal Service to decide which components would be designated as constant elasticity components and which would not.

For example, Higher Level Supervisors used the constant elasticity method and so were 100 percent variable (in the economic sense), while Other Supervisors and Technicians were considered fixed. Window Service components used the constant elasticity method, while Contract Stations were assumed to be 100 percent fixed. McBride at 8, 10.

McBride notes that 11, of approximately 240, cost segments are classified as fixed, even though they have generally declined at a much faster rate (often twice as fast) as have system-wide total costs, and estimates that if these segments were considered variable to the same extent as the system (82.7 percent), then “fixed costs would be reduced by about \$2.7 billion, which in turn would reduce the 2007 system-wide fixed cost percentage to 13.36 percent.” McBride at 11. Even if variability were one-fourth of the system average, fixed costs would still be reduced by approximately \$0.5 billion.

McBride also expresses serious reservations regarding the classification of cost components as “constant elasticity,” due to the lack of documentation regarding the type of elasticity-classification of components provided by the Postal Service. If elasticity-classifications were to change, so would the estimates of inframarginal costs. McBride at 6 n. 13.

The Public Representative shares these concerns. UPS and McBride are likely correct that there are some variable costs in costs currently classified as fixed costs, but the Public Representative contends that a subsequent

rulemaking to examine the classification of individual cost components and assignment of costs to them is a better way to address these concerns than the adoption of Proposal Two. UPS's estimates of "variable" fixed costs in the aggregate are too rough to be relied upon for attribution purposes.

Specifically, the Public Representative recommends the Commission open one or more rulemakings to:

- Update stale studies of variability,⁶³
- Develop detailed inquiries into the development of dependent component distribution keys,
- Determine whether cost drivers should be given the same weight when they are used to distribute cost to market dominant and competitive products, and
- Document and evaluate the criteria the Postal Service uses to determine whether a component is constant elasticity (CE), 100 percent attributable (VVC), part-attributable/part-fixed (PA/PF), or fixed (F).

V. CHANGED COMPETITIVE MARKET SINCE FTC REPORT AND COMPETITION IN COMPETITIVE PRODUCT MARKET

The fact that UPS is here seeking a more level playing field suggests that the field has not been leveled sufficiently, or at least UPS believes it is not at a fair level.

⁶³ It is also well-known that many estimates of independent cost component variabilities are out of date. The Commission opened a "Strategic Rulemaking," designed to solicit ideas to assist it to prioritize the updating of stale studies, as well as to consider new studies. The Commission received suggestions to undertake fourteen studies, ranging from development of new costing methods, using IMb to improve data and performance, vehicle highway service, and supervisor costs, among others. The Commission prioritized completing new studies on City Delivery Carrier Street Time Costs, Purchased Highway Transportation Costs, Postmaster Costs, and Window Service Costs. The Commission has recently completed a careful analysis of new city carrier street time variabilities (Segment 7); yet, much work remains before a reliable variability is established for this large cost segment. A new study on Purchased Highway Transportation was also completed and approved, but the Commission closed the docket before the studies on Window Service and Postmasters were undertaken. The Public Representative also recommends the Commission open a docket to evaluate new studies on Window Service, Postmasters, IMb as a data source, volume variability of Supervisors, Office Costs, Building Space, and to reconsider the classification of the cost components used to estimate inframarginal component costs.

Yet, since the PAEA was passed, the competitive market has changed significantly in recent years. All things considered, the Commission may determine competition is sufficiently vital that the previous need to enhance competition through regulatory fiat has diminished. Methodological costing adjustments of Proposal One might further change the competitive landscape, particularly if extended to Proposal Two or coupled with an increase in the share of institutional costs that must be borne by competitive products. Also, application of the cost methodology to market dominant products and the resulting negative impact on cost coverages where rates are subject to the price cap may be undesirable. UPS's push for additional attributable costs can represent an understandable attempt in its corporate interest to force the Postal Service, under the umbrella of regulatory law, to raise its competitive product prices higher than it would raise them otherwise, but that may impact the marketplace in a way that may be viewed as contrary to the public interest.

In addition, there may be limited practical benefit for UPS from increasing attributable costs for Postal Service products. While UPS might benefit from increased Postal Service prices for competitive products, the Postal Service could respond to increased cost attribution by selectively adjusting individual rate cells, and maintaining relatively low rates in rate cells where the competition is greatest, thus avoiding the result most beneficial to UPS, *i.e.*, increased Postal Service rates where competition is tightest. This approach could also apply to prices negotiated under NSAs.

As part of this analysis, the state of the current competitive market and the claimed need to relieve market distortions should be considered. The Commission must take these all these factors into account when considering the advisability of the cost attributions that could impact the market's playing field.

A. Negotiated Service Agreements

An important indicator of the current state of competition for postal service customers is the large number of negotiated service agreements the Postal Service has

entered into at prices below published competitive product rates. In FY 2010 and FY 2011, there were only 13 domestic competitive NSAs in each year, whereas by FY 2015, the number of domestic competitive NSAs escalated to 81.⁶⁴ When requesting Commission approval for each of those agreements, the Postal Service alleged the market for the product is “highly competitive” and that its bargaining position is constrained by other shippers in the market such that it cannot raise prices, decrease service, quality or output without risking the loss of business.⁶⁵ Correspondingly, in each of these cases, the Commission has agreed with the Postal Service, finding pursuant to 39 U.S.C. § 3642(b)(1) that the Postal Service does not exercise sufficient market power to effectively set the product price substantially above costs nor raise prices significantly, decrease quality or decrease output without risk of losing a significant level of business.

Thus, each of these cases stands testament to the fact that substantially raising the current NSA offering prices by substantially raising attributable costs of competitive products would risk the loss of a significant level of business in a highly competitive market. That loss could be contrary to the Postal Service’s interest and the public interest in a vital and efficient universal mail system.

B. Rate Comparisons

Currently, the prices for the respective competitive products of the Postal Service and the products of UPS and FedEx do not always favor the Postal Service. In fact, some Postal Service prices are much higher than UPS prices. This is the case with many Priority Mail prices compared to UPS and FedEx Ground prices. Many such UPS and FedEx standard rate list prices are much lower than Postal Service prices but are

⁶⁴ See Negotiated Service Agreements (NSAs) Statistics, November 2015 Update, Commission website at <http://www.prc.gov/sites/default/files/NSA%20Update%20November%202015.pdf>

⁶⁵ See e.g., Docket No. MC2016-47, Order Adding Priority Mail Contract 170 to the Competitive Product List, Order No. 2978, January 5, 2016.

identical with each other.⁶⁶ For instance, UPS Next Day Early and FedEx Express Next Day by 9:30 a.m. appear identical. Also, the published UPS and FedEx Ground rates appear identical. The Commission may be concerned about the nature of the competition where the Postal Service is competing against competitors with not only much lower rates but which, themselves, are maintaining lower identical rates.

Given the generally accepted view that superior service performance is offered by UPS and FedEx for their products, the marketplace may be effectively in competitive equilibrium where regulatory intervention and directed change in Postal Service attributable costs would *not* be useful. Competitors, free of cost and price regulations, can readily adjust their own prices, if they choose. But a forced increase in the Postal Service's estimated attributable costs would set a higher price floor that could prevent the Postal Service from adjusting competitive product prices downward below that floor if necessary to meet competitors' prices. That may tilt the field in the direction away from free and open competition. That may not be in the public interest.

A brief look at the published rates of the Postal Service, UPS and FedEx is instructive as to the need for changing costing methodology that can lead to price increases for the Postal Service's competitive products. UPS states, "Priority Mail, UPS Ground, and FedEx Ground have comparable characteristics, and these products are often viewed as comparable by Wall Street analysts, business journals, third party shipping services, and the Postal Service itself. UPS is not aware of any [of] its products being considered more directly comparable to Priority Mail."⁶⁷ UPS Ground and FedEx Ground have identical standard rates.⁶⁸

⁶⁶ 2015 UPS Rate and Service Guide, Standard List Rates, Updated November 2, 2015, express and ground rate schedules at 43-71; 2015 Service Guide, fedex.com/serviceguide, updated October 6, 2015, express and ground rate schedules at 30-56 and 105-111.

⁶⁷ UPS Response to CHIR No. 5, question 1c at 1-2.

⁶⁸ Published rates are also identical to the penny for UPS Next Day Air Early and FedEx U.S. Express Package Rates for all eight zones up to 100 lbs. and diverge only thereafter slightly up to 150 lbs. 2015 UPS Rate and Service Guide, Standard List Rates, November 2, 2015; 2015 Service Guide,

It is particularly important to measure the state of competition by looking at Priority Mail. Revenue from Priority Mail is far greater than from any other Postal Service competitive product. For instance, in the 1st quarter of FY 2015, Priority Mail revenue totaled \$1.218,389 billion while the Postal Service's next largest revenue came from 1st Class Package Services at \$330.301 million,⁶⁹ with revenue from Parcel Select at only \$36.968 million and Standard Post at \$12.850 million.⁷⁰ Priority Mail represented 76 percent of those competitive products.

Most significantly, UPS Ground and FedEx Ground rates are already lower, and in many cases significantly lower than the Postal Service's Priority Mail Retail rates in virtually all 350 rate cells in zones 2-8 up to the Postal Service maximum weight of 70 pounds.⁷¹ Only 10 Postal Service rate cells have rates lower than their competitors' rates and they are not significantly different than their competitors' rates.⁷² The lower rate Postal Service rate cells are only in the 10 rate cells in zones 1&2 to 8, for 1 pound mail, and in zones 1&2 to 4, for 2 pound mail. In zone 1, the competitors' 1 pound rate is \$6.61 and for 5 pounds, \$7.70. The Postal Service's lower zone 1&2 Priority Mail Retail rate for 1 pound is very similar at \$6.45 and for Commercial Base, \$5.75.⁷³ The Postal Service's Priority Mail Retail and Commercial Base rates for 5 pounds are either significantly higher or much the same as its competitors' rate, \$9.85 (Retail) and \$7.39

fedex.com/service guide, updated October 6, 2015 at 30-51. It is curious that their rates are identical. There appears to be communication between UPS and FedEx to establish identical rates.

⁶⁹ For small packages with weight increments up to 15.99 ounces. UPS and FedEx do not have weight increments for packages less than one pound except for express envelopes up to 8 ounces with guaranteed delivery.

⁷⁰ UPS Response to CHIR No. 1 at "CHIR No. 1 Market Share Analysis," UPS Quarterly Data tab.

⁷¹ There are other rate cells in rate zones for mail to locations non-contiguous to the mainland. The Postal Service's rates are higher in all cases.

⁷² MCS, Competitive Products, Priority Mail Rates, 2015; 2015 UPS Rate and Service Guide, Standard List Rates, Updated November 2, 2015 at 68-71; 2015 Service Guide, fedex.com/service guide, updated October 6, 2015 at 105-110.

⁷³ Commercial Base is available to mailers who use specifically authorized postage payment methods. Mail Classification Schedule, Priority Mail, Section 2110.4, Price Categories.

(Commercial Base) versus \$7.70 for competitors.⁷⁴ Yet, UPS offers guaranteed service.⁷⁵

The Postal Service's Retail Ground (formerly Standard Post) rates offering "less than urgent service" that may be "deferred" are not always lower but can be even higher than its Priority Mail Retail rates. The zone 1 rate for one pound is actually higher at \$6.75 than its Priority Mail Retail rate of \$6.45 compared to \$6.61 for the competitors. For 5 pounds in zones 1&2, the Postal Service Retail Ground rate is the same rate as its Priority Mail Retail rate of \$9.85 versus \$7.70 for its competitors' Ground rate.⁷⁶

These price comparison examples at important intersections of competition do not paint the picture of a Postal Service pricing its products at levels distorting competition so that its competitors are unable to compete. They demonstrate that in addition to offering better service guarantees, competitors' rates are significantly lower than Postal Service rates at many important points of competition.

UPS makes much of the Postal Service's rate reductions in FY 2014 in the Priority Mail Commercial Base and Commercial Plus rate categories.⁷⁷ Rates were reduced "as much as 58%" for packages to gather market share in "zones 1-5 and weighing between six and twenty pounds the rate cells most popular for the burgeoning e-commerce market." CHIR No. 1 at 10. UPS claims the discounts remain after the January 2016 rate increase. *Id.* at 11. However, a review of the Postal Service's rate schedules, effective January 2016, comparing the Postal Service's Priority Mail

⁷⁴ Docket No. CP2016-9, Order No. 2814, Competitive Products, Part B, Priority Mail.

⁷⁵ UPS has guaranteed delivery for service within one to five business days. The Postal Service does not guarantee delivery for Priority Mail. It is not clear whether FedEx includes guaranteed delivery for this service.

⁷⁶ Mail Classification Schedule, Part B, Competitive Products, Section 2135, Retail Ground. The Retail Ground rates are identical to Priority Mail Retail rates through zone 4 from 3 lbs. up to 70 lbs. and only slightly lower by about 20 percent in zones 5 through 8 for up to 70 lbs. Nevertheless, Postal Service Retail Ground rates remain much higher than competitors' Ground rates.

⁷⁷ CHIR No. 1 at 10-17.

Commercial Base rates for those zones and weights with its competitors' rates, indicates much tighter price competition than is being suggested.⁷⁸ The Postal Service's rates in many cells are back above their competitors' rates. For instance, of the 60 rate cells involved for that Commercial Base rate category (4 zones times fifteen weights), the Postal Service's rates are higher (and for all of Zone 5 considerably higher, by 20 percent or more) than the competitors' rates in 21 of the cells. In the other cells in that group, the rates differ by a few pennies and in only one cell by more than 50 cents. The Postal Service's prices are no longer seriously undercutting the prices of its competitors for that important service.

The Neels Report contends that the Postal Service has access to production volumes from its market dominant sales that afford it economies of scale and increased efficiency that private competitors do not enjoy, which amplifies the competitive advantage of not attributing inframarginal costs that distorts competition. Neels Report at 18. However, UPS and FedEx also have access to production volumes affording them economies of production as volumes increase that make their networks more efficient. The services where they compete with the Postal Service for parcels weighing up to 70 pounds also offer service between 71 pounds up to 150 pounds,⁷⁹ thereby providing a source of production volume that affords them economies of production not used by the Postal Service. Thus, UPS and FedEx also have access to volumes that enable them to improve their network efficiency which is not available to the Postal Service. It is not fair to suggest the Postal Service's market dominant operations offer network efficiencies not available to its competitors when the competitors have other production volumes available to improve their network efficiencies.

⁷⁸ This compares the new January 2016 Postal Service competitive rates with the UPS's rates updated November 2, 2015.

⁷⁹ 2015 UPS Rate and Service Guide, Standard List Rates, Updated November 2, 2015, express and ground rate schedules at 43-71; 2015 Service Guide, [fedex.com/service guide](http://fedex.com/serviceguide), updated October 6, 2015, express and ground rate schedules at 30-56 and 105-111.

Contrary to the Neels Report, the availability of market dominant production volumes does not provide a “huge advantage granted to the Postal Service in the form of lower average variable costs.” *Id.* at 19. To the extent market dominant products might amplify an alleged competitive advantage the Postal Service has over its competitors by not attributing inframarginal costs, that advantage is offset by a similar advantage by competitors’ access to their own production volumes not reasonably available to the Postal Service. The UPS claim that the availability of market dominant products to improve network efficiency distorts competition ignores countervailing production volumes available to the Postal Service’s competitors.

Another factor which must be changing the competitive marketplace is the significant rise in Postal Service prices for competitive mail. The current tilt of the market must be considerably different than when the FTC issued its report in 2007; for instance, after several years of price increases, Priority Mail prices increased by 9.7 percent on January 17, 2016. UPS Ground and FedEx Ground increased on average of 4.9 percent in the last month.⁸⁰ The overall rate gap where Priority Mail prices are higher than the Postal Service’s competitors appears to be widening as the Postal Service’s competitors do not seem to be keeping up with the Postal Service’s recent price increases.⁸¹ For Priority Mail, where many of the Postal Service’s rates are already considerably higher than their competitors, it makes little sense to order a change in costing methodology that will clearly increase attributable costs that can force further price increase on the Postal Service where it now only enjoys a 15 percent market share. This can only tilt market share further towards Postal Service competitors.

⁸⁰ USA Today, January 15, 2016, <http://www.usatoday.com/story/tech/news/2016/01/14/post-office-others-raise-shipping-service-rates/78802926/?hootPostID=4215d86e73ff468f6d682562b40c5761>

⁸¹ A table demonstrating the percentage rate increases since 2007 of each competitive product and rate category where the Postal Service and its competitors’ compete would be useful to assist the Commission in its deliberation.

C. Market Shares

UPS Ground and FedEx Ground together dominate the share of revenue derived from the market that includes Postal Service Priority Mail. In FY 2015, UPS Ground and FedEx Ground, combined, had an 84.6 percent share of the revenue in that market while the Postal Service only had 15.4 percent of the revenue in that market.⁸² This is a distinctly different picture than one portrayed by measuring market share in terms of volume.

D. Profits

UPS and FedEx are currently able to compete in the marketplace and make substantial profits well in excess of the Postal Service's ability to earn profits. For instance, UPS reported net income after taxes for 2014 of \$3.032 billion on total revenue of \$58,232 billion. The 2013 net income after taxes was reported as \$4,372 billion on total revenue of \$55,438 billion. UPS's U.S. Domestic Package revenue totaled \$35,851 billion in 2014, a slight increase over 2013 revenue of \$34,074 billion. Similarly, UPS's International Package revenue increased in 2014 to \$12,988 up from \$12,429 billion in 2013.⁸³ These substantial profits on revenue indicate that UPS has been able to compete with the Postal Service in the last two years despite the Postal Service's rates which UPS complains are underpriced and "disrupt" the market.⁸⁴

Substantial profits were also reported by FedEx. Its net income after taxes for FY 2014 was \$2.097 billion on total revenues of \$45,567 billion. The FY 2013 net income after taxes was reported as \$1.561 billion on total revenues of \$44,287 billion.⁸⁵

⁸² UPS Response to CHIR No. 1 at "CHIR No. 1 Market Share Analysis," Revenue Shares tab.

⁸³ UPS Form 10-K, U.S. Securities and Exchange Commission, December 31, 2014 at 26.

⁸⁴ UPS argues, "This type of unfair competition distorts competitive markets to the detriment of competitors and consumers alike." Petition at 17.

⁸⁵ FedEx Form 10-K, U.S. Securities and Exchange Commission, fiscal Year ended May 31, 2014, at 83.

Its operations are segmented. Most relevant for the Postal Service are the FedEx Express and FedEx Ground segments where each segment had revenues in 2014 of about \$11.5 billion. The FedEx Express segment enjoyed operating income of \$1.172 billion in 2014 and the Ground segment had operating income of \$1.955 billion in 2014.⁸⁶ While FedEx Express revenues were flat in 2014, FedEx ground segment revenues increased 10 percent in 2014 due to both volume and yield growth.⁸⁷ Finally, of the many FedEx risk factors reported in its Form 10-K as potentially affecting its business, FedEx does not cite Postal Service pricing as a risk factor. The only reference in several pages of discussion on risk factors is a potential adverse impact from disruption or modifications in service by the Postal Service due to its financial difficulties that might affect Postal Service pricing.⁸⁸ There is no reference to any risk from Postal Service pricing, below cost, its products that compete with FedEx products..

These profit figures indicate healthy, highly profitable, businesses in competition with the Postal Service. The picture they paint of highly subsidized competitive products eating away at their market share and unfairly competing in a tilted playing field is not borne out by the actual results of their operations.⁸⁹ The market share information provided by UPS indicates generally that Commission ordered changes in costing methodology that force Postal Service prices increases may simply fuel industry-wide across-the-board price increases for those products where competition is alive and well. Competition takes many forms. It may be in price as UPS asserts is tantamount, but competition is also over service and consumer convenience.

⁸⁶ *Id.* at 48, 53.

⁸⁷ *Id.* at 54, 59.

⁸⁸ *Id.* at 76. See generally, Risk Factors, *id.* at 72-76.

⁸⁹ UPS cites to an example in FY2014 of Postal Service price reductions affecting its market share. Response to CHIR No. 1. It claims that the increase in the Postal Service's market share may have resulted from that price reduction, but there is no showing that the price reductions in the rate cells would not have been possible if Proposal One were adopted. Moreover, the market share shift may have been due to other extraneous factors unrelated to pricing that might have been engineered by any of the parties, such as shifting advertising or marketing efforts or changes in operations or service standards at that time.

E. The Commission May Defer Attributing Inframarginal Costs Pending Gathering Additional Data

The Commission may defer or decline to attribute inframarginal costs at this time. Before ruling on either Proposal One or Proposal Two, the Commission may choose to gather additional data to consider the appropriateness of new methods of allocating short-run fixed, joint, and common costs as well as to examine the manner in which fixed, joint, and common costs are distributed to products within each component.

Before finalizing a determination of causality, additional data may be desirable regarding the competitive product market. At this time, given the fluidity of Postal Service price increases for its competitive products and the information available surrounding the competitive parcel markets, and possible additional studies, the Public Representative suggests, alternatively, that the Commission delay the attribution of costs under Proposal One pending further developments.⁹⁰

VI. CONCLUSIONS

A. Accept UPS Proposal One

The Public Representative believes that UPS Proposal One's method of measuring inframarginal costs could be accepted as a method of measuring and distributing variable costs as attributable costs. The Commission has accepted this method of estimating and distributing inframarginal costs since Docket No. R2006-1. Measuring product cost coverage as the ratio of product revenues to product-level variable costs provides a better measure of whether a product is recovering its costs and improving the financial condition of the Postal Service, a goal the PAEA mandates

⁹⁰ Although Proposal 3 properly has been deferred from this proceeding, the negative impact of any future changes in the share of institutional costs to be recovered by competitive products would be exacerbated by attribution of inframarginal costs at this time.

the Commission's rules to promote. If Proposal One is approved, the attribution of inframarginal costs should be to market dominant products.

The Commission also must consider the net economic effects of the transfers of parcel products to the competitive product list and the increased competitive rates affecting the competitive landscape currently facing the Postal Service.

Alternatively, that the Commission may delay the attribution of costs under Proposal One pending further developments.⁹¹

B. Reject UPS Proposal Two

The Public Representative recommends the Commission reject Proposal Two. The regressions it employs to identify over \$3 billion in hidden variable costs are fatally flawed because they regress component-level fixed costs against system-wide weighted volumes. Consequently, they do not provide component level information on hidden variable costs necessary to demonstrate a causal connection between the costs and the product.

C. Opening New Docket

The Public Representative maintains that the public's interest would be better served if the Commission were to address the misallocation of attributable costs contained within each component by opening a docket to consider the appropriateness of new methods of allocating short-run fixed, joint, and common costs as well as to examine the manner in which fixed, joint, and common costs are distributed to products within each component within this docket.

⁹¹ Although Proposal 3 properly has been deferred from this proceeding, the negative impact of any future changes in the share of institutional costs to be recovered by competitive products would be exacerbated by attribution of inframarginal costs at this time.

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CONSUMER SAFEGUARDS IN THE INFORMATION AGE: The Need for New Cost Allocation Methods

Introduction

The telecommunications industry in the United States is presently poised for major changes in its technological design and legal structure. New telephone technologies, Signaling System 7, fiber optic cable, and digital switches are being introduced into the existing telephone network.¹ These new technologies will cost hundreds of billions of dollars. Thus, the question of who pays for these investments becomes an important policy issue. Misallocation of these costs to basic telephone service could threaten the affordability of that telephone service (Gabel, R., 1991). This is a special concern for older persons, for they value basic telephone service more highly than other age groups (Cooper, 1987).

A number of state utility commissions are considering proposals to accelerate the

deployment of these new technologies.² Members of Congress have introduced legislation that, in part, has the intent of accelerating the deployment of these new technologies.³ Protecting basic telephone customers from being put at risk as telephone companies make new investments and enter new lines of business has been a major concern for regulators and lawmakers.

...without more appropriate cost allocation in the future, efforts to protect basic telephone customers will fail.

The purpose of this paper is to demonstrate that there has been a pattern of misallocated common costs, and that without more appropriate cost allocation in the future, efforts to protect basic telephone customers will fail.⁴

The Problem of Common Costs

Telephone facilities become common facilities when they are used jointly by more than one service, for example, by local and long distance services. The costs of such facilities thus become "common costs." Regulators have generally allocated common costs according to relative usage. For example, if two services use the same facilities an equal amount, they would equally share in absorbing the costs.

This allocation rule makes sense if the services are very similar. However, if they are dissimilar, i.e. if they use the same facility in different ways, and impose different costs on the design and maintenance of the facility, simple usage is no longer equitable. For example, a triple tractor trailer and an automobile may travel over a common highway for the same distance at the same speeds, but the triple tractor trailer will impose higher design and maintenance costs on the highway.

A telecommunications system is similar to a highway system. Both are designed to carry a variety of traffic, ranging from traffic which is easy to accommodate, to traffic which places significant special design and maintenance requirements on the system.

In a telephone system, basic or local telephone service, which is voice

telephone connection within a local service area, is analogous to the automobile. The facilities used to supply basic local telephone service are simple to design and relatively inexpensive to operate and maintain.

Since the early 1900s, basic telephone service has been provided over facilities located in a local service area. These facilities have been used to supply both basic, simple telephone service and premium, complex telephone services in common.⁵ The more complex telephone services, analogous to the tractor trailer, have necessitated expensive alterations in telephone facilities in order to accommodate their more stringent technical and engineering requirements.

...regulators have not recognized that the costs of many new facilities were caused by the introduction or addition of premium services.

For the most part, regulators have not recognized that the costs of many new facilities were caused by the introduction or addition of premium services. While customers of basic local telephone service may have received some benefits from these investments, they have also borne a disproportionate share of their costs, as this brief will

demonstrate.⁶ Besides unfairly penalizing local customers, this cost allocation has created pricing inefficiencies. Demand for the underpriced premium services is artificially increased, while use of overpriced local service is depressed.

This issue brief first examines two major events in the history of telephone service. The first case involved the integration of separate long distance and local telephone networks into a single, unified network during the first two decades of the twentieth century. The second case, the implementation of direct distance dialing (DDD) between 1950-1970, involved the upgrading of long distance service from a service requiring an operator to connect long distance calls, to the automatic call-connecting system long distance customers currently employ. In each instance, the costs of the new technology were disproportionately borne by customers of basic local service.

Now, as this brief will explain, history is repeating itself. Although the present telephone network is perfectly adequate for providing voice services, it is not adequate for providing video or medium and high-speed data services. Consequently, new investments are converting the telephone network from voice to digital to accommodate the higher technical requirements of data services (Freeman, 1989).

While local telephone customers may benefit from these investments, they stand in danger of bearing the costs of integrating separate voice, data, and video networks into a unified telecommunications network, rather than the new services causing those costs. Current cost allocation methods are failing to recognize this development because they do not identify the types of services which are the source of demand, the "prime movers," for new investments. Consumer safeguards incorporated in recent legislation promoting more rapid introduction of premium technologies and services also fail to address the issue of unfair distribution of these costs. This brief closes by presenting policy options that would allocate those costs more appropriately.

Integrating the Basic Local Network and the Long Distance Network

Consequences of Separate Networks

Today, we take it for granted that when we pick up a telephone, we can make either a local or a long distance call. This capability has not always been available. Shortly after the origins of the telephone industry in 1879, local and long distance service were provided over separate networks. There were legitimate technical and economic reasons why this was the case. Local service could use an inexpensive, single wire to make connections because distances

between callers were short. This single wire was inadequate for long distance service because the telephone signal weakened too much. A separate long distance network, using two wires to make connections, was needed.

Local service quickly established itself as a popular service. In 1883, 590,000 local calls were made per day, amounting to 4.76 calls per telephone. By 1889, the figure doubled to 1,240,000 calls per day, or 5.85 calls per telephone (see Table 1). In contrast, long distance or toll service stagnated during this time. In

1883, the average number of daily toll calls was 5,000, or .04 calls per telephone. By 1889, the daily figure had increased to 8,000, still only .04 calls per telephone.

Figure 1 represents these events in trend terms. Between 1883 and 1889 local calls per telephone increased by 23 percent, while long distance calls showed no increase.

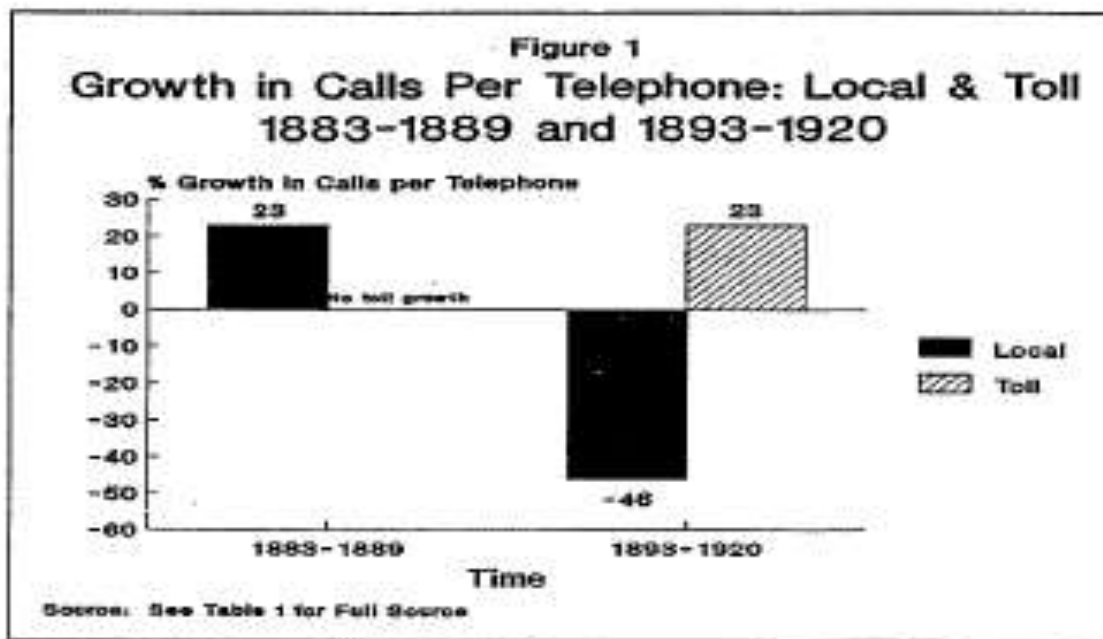
Consequences of Integration

American Telephone and Telegraph (AT&T) reasoned that the inconvenience of the separate long

Table 1
Number of Telephones and Average Daily Local and Toll Calls,
Bell System Companies, 1883-1920

Year	Telephones (000)	Average Daily Calls (000)		Average Daily Calls Per Telephone	
		Local	Toll	Local	Toll
1883	124	590	5	4.76	.04
1885	156	747	7	4.79	.04
1887	181	1,012	7	5.59	.04
1889	212	1,240	8	5.85	.04
1893	266	1,872	34	7.04	.13
1900	836	4,773	149	5.71	.18
1905	2,285	11,404	368	4.99	.16
1910	3,933	18,256	602	4.64	.15
1915	5,968	25,184	819	4.33	.14
1920	8,334	31,836	1,327	3.82	.16

Source: "Historical Statistics of the U.S.: Colonial Times to 1957," U.S. Department of Commerce, 1960 ed., Series R-1-9, pp. 480-481



distance network, which required customers to make toll calls from an AT&T office, was responsible for the sluggish growth of long distance service. Consequently, AT&T decided to integrate the two networks in order to make long distance calling more convenient. This was

accomplished by a series of expensive technological changes to the local network that began in 1893 (Bell Telephone Laboratories, 1975).

Cost Consequences

Although these extensive modifications of the local network were made to facilitate the expansion of long distance service, the costs were allocated to local telephone service.⁷ For example, one of the technological changes, the metallicization of local telephone wires, to permit carriage of long distance signals, raised local equipment costs by 35 percent (Gabel, D. 1990).

Although these extensive modifications of the local network were made to facilitate the expansion of long distance service, the costs were allocated to local telephone service.

Demand Consequences

The integration of the networks had a profound impact on the demand for local and long distance service respectively (Gabel, R. 1991). While the absolute number of local calls continued to increase, the number of local calls per telephone declined from 7.04 in 1893 to 3.82 during the period the two networks were being integrated, a decline of 46 percent. In contrast, long distance service was a clear beneficiary of integration. Average daily long distance calls per telephone increased from .13 in 1893 to .16 in 1920, an increase of 23 percent. Development of an integrated telephone network resulted in decreased use of the telephone for local calling, while expanding the long distance market.

Upgrading the Local Network to Provide Automatic Call Connections

Consequences of Manual Operators

Just as we take for granted the capability of picking up a telephone and dialing either local or long distance, we also take for granted the capability of connecting directly to another person without the intermediation of an operator. Beginning around 1930, and continuing through the early 1960s, the telephone industry introduced direct distance dialing (DDD) as a feature of long distance service. Making long-distance calls with manual switch-

board service was cumbersome. The "calling party" had to ring the operator, who would then ring another operator close to the called party. That operator would then ring the "called party" and connect the call.

In order to implement DDD, the telephone network had to be reorganized. Numbering methods, signaling methods and switching methods had to be transformed and upgraded so that calls could be automatically connected.

Consequences of Automatic Call Connection

Numbering. Numbering schemes ensure that each user has a unique number, so that calls are routed to the proper destination. Numbering in local telephone networks before World War II was simple. Most calls in a local calling area could be reached by dialing no more than four digits. Nationwide toll dialing greatly increased the accessibility of persons in the network, so it was necessary to add a three digit prefix (the central office code) as well as another three digit area code to each person's number to ensure a unique "address" for every subscriber. The switching equipment of the time needed to be modified in various ways to accommodate these extra digits.

Signaling. Signaling equipment controls the flow of traffic so that as

a call is switched from origin to destination, it doesn't overload the system's capabilities. Prior to DDD, automatic signaling could be accomplished satisfactorily over short, local, ranges. This type of signaling is simple and cheap because it requires only one signaling unit per circuit. With the need to send control signals over long distances, new and more expensive signaling methods utilizing alternating current were needed (Welch, 1981).

Switching. Automatic switching equipment routes traffic from its origin to its final destination. It does this by recognizing the number to be called, storing it temporarily while it identifies a path through the network, and then routing the number to its final destination. At the time the DDD upgrades were initiated, existing switches were incapable of performing this storage and routing function for 10 digits. Switches needed to be modified from 7 digit to 10 digit capacity. Switches also needed to be modified to accommodate the new alternating current signaling system (Gabel, R., 1991).

Cost Consequences

Each of these extensive modifications to the local network was made to facilitate the expansion of long distance service. The average investment in central office equipment per telephone increased

43 percent between 1948 and 1959, the period encompassing the changeover to DDD.

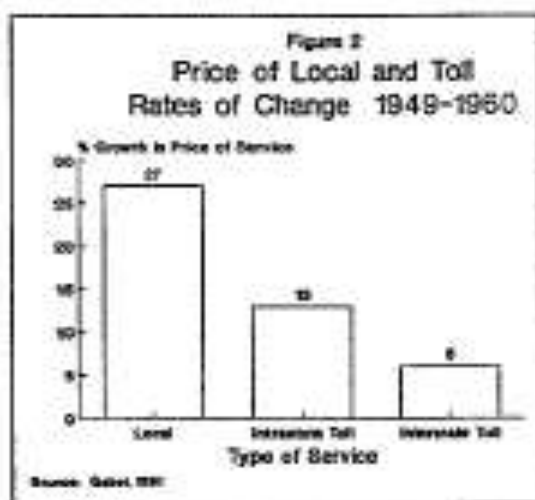
In 1947, the FCC adopted a "Separations Manual," which allocated common costs on the basis of the relative use interstate long distance and local customers made of broad categories of equipment. Although relative usage methods allocated some costs to long distance, they seriously understated that allocation because they treated local and long distance as homogeneous services and failed to recognize that the higher engineering standards of long distance service were the primary generators of costs. For example, DDD dictated modifying all switches to store and route 10 digits.

State Public Utility Commissions (PUCs) are authorized to allocate costs between intrastate long distance and local service. Allocations made by PUCs at that time were even less equitable than those made by the FCC. While the FCC established rules to allocate some common costs to interstate long distance, state PUCs did not have similar rules to allocate common costs to intrastate long distance.

Demand Consequences

As a result of federal and state allocation decisions, 90 percent of the cost of upgrading signaling and switching equipment to accommodate

DDD was allocated to local telephone service, and 10 percent to long distance (Gabel, R., 1991). This misallocation of costs was reflected in telephone rates. During this period of upgrading to DDD, local rates increased by 27 percent, while intrastate and interstate long distance (toll) rates increased by 13 and 6 percent respectively (see Figure 2).



Integrating the Current Voice Network with Separate Data and Video Networks

Today we do not yet take for granted the capability of picking up a single telephone instrument to make a telephone call, engage in an information transaction such as electronic banking, or make a video conference call. These services are currently offered over separate media

or networks. Yet, much of recent telecommunications legislation is premised on the belief that this integrated capability is essential and ought to be hastened. That premise may be correct. However, as the previous discussion demonstrated, the cost of investments needed to provide integrated multimedia services must be properly allocated so that basic local service customers are not overcharged.

Consequences of Integration

The current analog telephone network provides perfectly satisfactory service for voice telephone calls.⁵ However, the present analog network fails to provide three operating conditions needed for many data and video services: fast call set-up time, enormous transmission capacity, and error free transmission.

Fast Call Set-up Time. In order for any call (be it voice, data, or video) to be economical it must take less time to "set-up," i.e. to dial digits and connect to the called party, than it does to transmit the information. The current voice network meets this condition for voice calls, but not for high-speed data and video.

Enormous Transmission Capacity. Data and video transmissions require much larger capacity (bandwidth) than voice calls to be fully efficient. Data and video calls have the

capability of decreasing transmission time by increasing their use of capacity on the transmission wire. The current voice network does not have enough capacity to permit data and video calls to sufficiently decrease transmission time.

Error-Free Transmission. Finally, data calls require error rates 100 to 1,000 times lower than voice calls (Kessler, 1981). The current voice network does not provide this capability. Nor, does voice communication require error-free transmission. The human ear and brain can compensate for errors and noise on the line, but computers cannot.

Because data and video networks have more stringent operating requirements, they have developed separately from the voice telephone network, just as local and long distance markets developed separately in the nineteenth century because of different operating requirements. And, just as AT&T later chose to integrate the separate local and long distance networks at the turn of the century, the Bell Operating Companies (BOCs) are integrating separate voice, data and video networks into a single, multi-purpose network, often referred to as integrated services digital network (ISDN).

The existing voice network is being transformed in three ways in

Current regulatory practices indicate that local telephone customers will most likely bear the major cost burden. If so, local rates will be higher than they should be by 50 percent or more.

order to bring about this integration. First, the existing signaling methods are being replaced with a new signaling method known as Signaling System 7 (SS7) which shortens call set-up time. Second, fiber optic cable is being introduced to increase transmission capacity and speed. Finally, switches that currently operate on analog principles are being replaced with digital switches in order to reduce error rates.

Cost Consequences

These investments in common network equipment represent extensive modifications of the existing telephone network. The potential cost impacts are very large. Although it is difficult to know exactly the size of the total cost, it could amount to hundreds of billions of dollars (Wigand, 1988 and Schumate, 1989).

Whether residential telephone customers shoulder a disproportionate share of such costs depends to a large extent on how they are allocated. Current regulatory

practices indicate that local telephone customers will most likely bear the major cost burden. If so, local rates will be higher than they should be by 50 percent or more.⁹

At the federal level, FCC methods of allocating common costs according to usage overcharge common costs of new investments to local telephone users. For example, only high speed data and video calls require the extra capacity provided by fiber optic cable yet voice calls will be charged just as much per second of use.¹⁰

Similar misallocations are occurring at the state level. PUCs allocate only a portion of common costs to non-basic services when they set rates for those services. They allocate the "residual" or the remainder of common costs, to basic services. This ratemaking method burdens basic, local telephone service customers with a disproportionate responsibility of paying for the common costs of digital switches, SS7 and fiber optics.

Benefits of an Integrated Network

The argument is often made that having a single network from which multiple products and services are offered creates efficiencies, known as economies of scope, from which all services benefit (Baumol, Panzar and Willig, 1982). If that is true, few would argue against regulators

permitting integration which promises such economies of scope.

A corollary argument is that local service rates have been kept low and universal service promoted because many telephone services have been offered on the same network. While there is general agreement that the telephone industry exhibits economies of scale, and to a lesser extent economies of scope (Bonbright, Daniels, and Kamerschen, 1988), the data do not support the contention that local service rates have fully benefitted from these economies of scope.¹¹ As shown in Figure 2, local rates rose relative to premium services during an earlier period in which the network was upgraded to provide new premium services. Similarly, in recent years local service rates increased by 43 percent between 1984 and 1990, while interstate and intrastate long distance rates decreased by 39 and 7.5 percent respectively (FCC, 1991).

While the historic overallocation of costs to local service has not prevented attainment of nearly universal service, the speed at which this has occurred has probably been affected. Telephone service achieved universal availability at a much slower pace than other information age consumer goods and services. For example, 60 percent of U.S. households owned a VCR within 10 years after its commercial debut, compared to over 70 years for

telephone service to reach 60 percent of U.S. households (Cooper, 1990).

It should not be taken for granted that local telephone service will continue to maintain its nearly universal coverage.¹² The size of the investments needed in order to create a multiple voice, data and video network are far larger than past upgrades. The possibilities for misallocation are that much larger. Consequently, in order for local telephone service to continue its nearly universal coverage, legislators and regulators will need to devise allocation principles and rules which address the failings of the past.

Policy Options

Federal and state regulatory commissions are not employing allocation methods that will insulate local voice telephone customers from picking up the majority of costs for investments they did not cause or demand. Legislators and regulators need to address this problem. A number of methods are possible. Two suggestions include the stand-alone method and a new form of residual ratemaking.

Stand-Alone Method. The stand-alone method assumes there are economies of scope, (i.e. it is cheaper to offer multiple services over a common network than it would be to offer them on separate networks on a stand-alone basis). Thus, the total

costs of all the separate networks will be greater than the costs associated with a common network. The difference represents the savings from offering many services over a common network. The stand-alone method would allocate those savings to each of the service types (voice, data and video) in proportion to the separate costs of each type of service (Bethesda Research Institute, 1988).¹³

New Residual Ratemaking. As currently practiced, residual ratemaking prices basic telephone service so that it pays for its own unique costs, as well as most of the costs common to all services offered on the network. The justification for this pricing method has been the belief that services besides basic local telephone service were incidental services in comparison to basic local service. Proposed new residual ratemaking would recognize that premium services are no longer the incidental services. They are the services causing the need for expensive investments. They are also the services for which the BOCs see the most growth potential. Therefore, new residual ratemaking would price basic voice service to recover its unique costs and allocate common costs to premium services.

These suggestions are not exhaustive. From a legislative standpoint, identifying the specific method is not as important as

... identifying the specific method is not as important as directing regulatory agencies to devise methods that allocate costs more appropriately...

directing federal and state regulatory agencies to devise methods that allocate costs more appropriately to services (either existing or future) that cause the demand for investments.

Unfortunately, several pieces of federal telecommunications legislation that propose a variety of safeguards for basic voice telephone customers, fail to address the misallocation of common costs discussed in this brief. Instead, they rely on current FCC accounting methods to guard basic telephone customers against subsidizing other services.

One bill, the draft introduced by Congressman Edward J. Markey, does direct regulators to address this shift of investment risk, however. It would have the FCC propose regulations requiring the "allocation of central office equipment and outside plant investment cost between regulated and nonregulated activities [to] be based upon the highest forecast unregulated usage over the life of the equipment."

When common costs are allocated according to current usage, investment risk is shifted to existing services. That is because demand will be low for new services relative to established services. Consequently, established services will shoulder a disproportionate share of costs in the early years. If demand for new services materializes, new services will pay an increasing share of common costs. However, if demand fails to materialize, established services will be forever burdened with the investment expense. This is especially unfair if the investment was intended primarily to make new services possible.

By allocating costs according to highest forecast usage, new services will bear some risks in the beginning, assuming that accurate forecasts of maximum usage could be obtained.¹⁴ This method would redress certain allocation inequities. However, it fails to redress those identified in this brief. Highest forecast usage is still a usage-based allocator, and as discussed earlier, assumes that all services place the same design and operating requirements on common facilities.

However, new premium services are placing more stringent (and expensive) design and operating requirements on common facilities than do basic services. For example, high-speed data calls have a much

higher demand for operating capacity than voice calls. A data call can use up to 4 million times more capacity of a fiber cable than a voice call for every second of usage. Highest forecast usage fails to capture this reality.

Conclusion

The telephone network of today is on the verge of being transformed into a multimedia information network as it is merged with data and video markets. Similar network integration efforts and network upgrades have occurred in the past, but they proceeded under inequitable allocation methods.

Legislators and regulators stand in a unique position to prevent inequitable misallocations from recurring.

Legislators and regulators stand in a unique position to prevent similar misallocations from recurring. If they succeed, they will have helped preserve affordable basic telephone service. If they fail, the nation may end up with a state-of-the-art telecommunications system capable of providing advanced services used by affluent consumers and business, at the expense of low and moderate income consumers' access to regular

telephone service. The extent to which they succeed will depend, in large part, on whether allocation rules are employed which recognize the special design, engineering and maintenance costs imposed by the newest round of premium services.

This PPI Issue Brief was written by Larry Fenster.

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Endnotes

1. The current telephone network was designed for voice communications and uses analog methods to connect calls and signal information in the network. SS7, fiber optic cable, and digital switches are optimized for digital methods to perform these functions.

2. For example, the Oklahoma Corporation Commission is currently considering various accelerated modernization proposals. One put forward by Southwestern Bell Telephone Company, requested an additional \$80 million to accelerate the introduction of SS7 and fiber optics. The Maryland Public Service Commission held hearings November 18 regarding C&P Telephone's proposal to install SS7 by 1993, fiber optics by 1994 and to pay for these investments by depreciating existing facilities at accelerated rates.

3. Among the bills are S 1200, HR 1527, and HR 1523 and a draft bill circulated by Congressman Edward J. Markey (D-Ma).

4. These arguments are fully developed in a forthcoming paper by Richard Gabel to be published by AARP, from which this brief draws.

5. "Premium" services are defined as long distance service, intelligent network services, data services, and video services (Gabel, R. 1991).

6. Ironically, this overallocation of costs to basic local service has created the impression that it has been subsidized by the more premium services (MacAvoy and Robinson, 1983) and (Kahn, 1984). Revenues from basic rates are high enough to recover the legitimate costs of basic service. But when common costs are overallocated to basic service, revenues are no longer sufficient. The revenue "shortfall" is made up from other services, hence the apparent subsidy.

7. This misallocation of costs did not go unchallenged. The minority stockholders of a local telephone company in Illinois sued AT&T, the majority holder of stock in the local company, claiming that their local company had been forced by AT&T to unfairly absorb long distance costs. The court decided in favor of the minority

stockholders, finding that the minority stockholders were forced to subsidize the growth of AT&T's long distance service (Dever, 1917).

8. Analog signaling, switching, and transmission methods operate by translating sound (either voice or tone messages) into electrical current and then retranslating that current into sound.

9. The current average monthly telephone bill is \$17.54 (FCC, 1991). Applying the estimates of the cost to accelerate fiber in Florida (Cooper, 1989) and SS7 and digital switches in Tennessee (RCG, 1990) to the nation as a whole, monthly residential telephone bills would increase by \$9.

10. Based on current fiber capacity, a single data call could use 4 million times the capacity of a voice call.

11. Economies of scale refer to declining costs as output for a single product increases. Economies of scope refer to declining costs for multiple products resulting from their common production/sale.

12. Approximately 93 percent of U.S. households have telephone service (FCC, 1991).

13. The contention of this brief is that data and video services have much higher stand-alone costs than voice telephone service. Consequently, they would receive a greater share of the savings resulting from a common network. Yet, affordable local telephone service would be protected because it would use its lower stand-alone costs as a reference.

14. This is unlikely, since market forecasts as currently practiced do not extend beyond five years into the future.

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